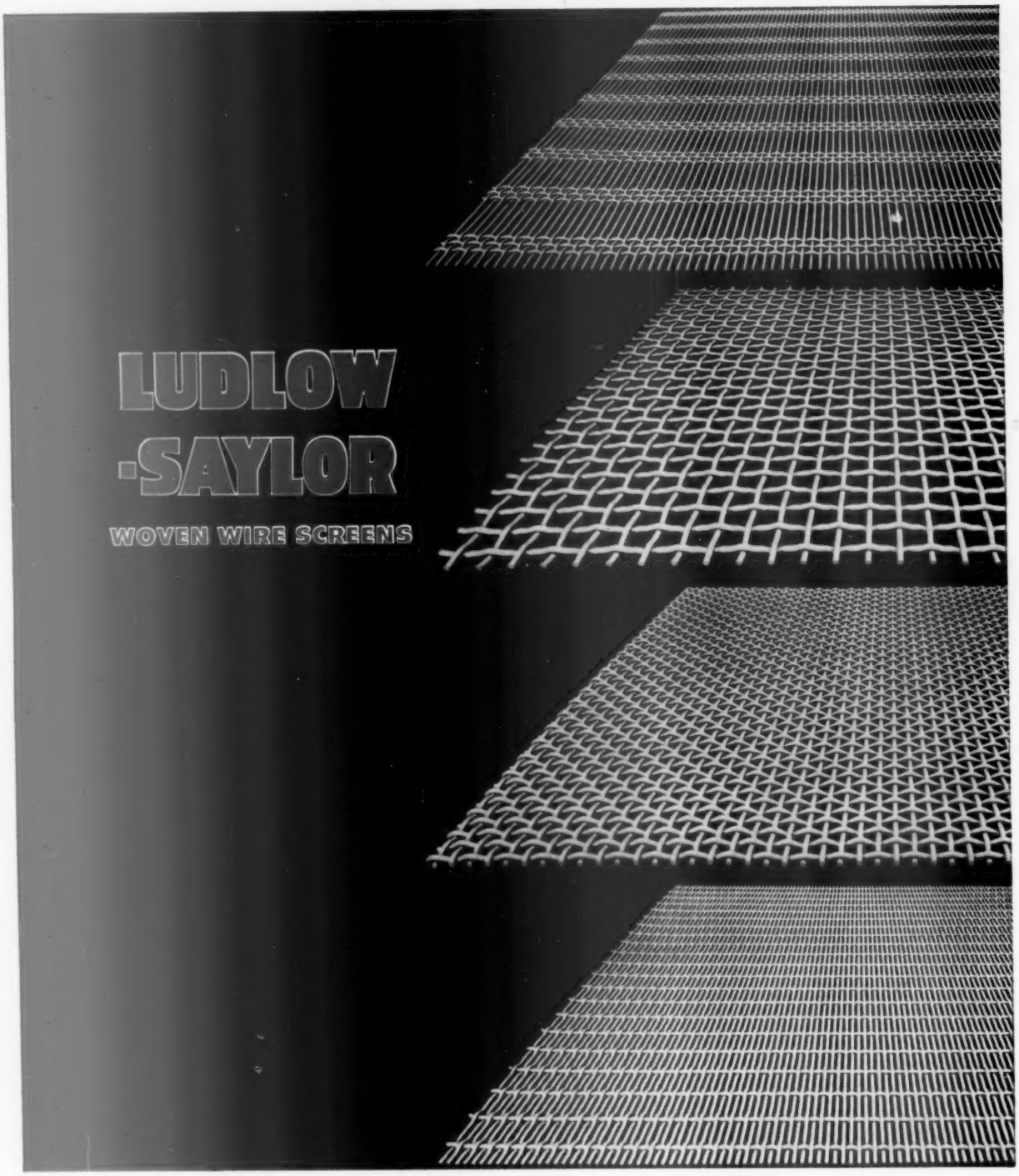
pit and quarry

THE BASIC MAGAZINE IN A BASIC INDUSTRY

CEMENT, SAND AND GRAVEL, CRUSHED STONE, SLAG, LIME, GYPSUM AND OTHER NONMETALLIC MINERALS

october 1961

FM RADIO COORDINATES ALL PHASES OF LARGE QUARRY OPERATION . . . *see page 94*



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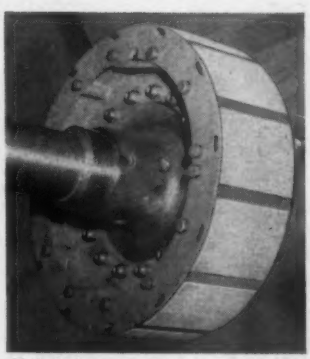
Enter Cover 2 on card, page 177

Hi-Torque brakes provide positive control as giant Loader lugs 35 tons

The heavy-duty requirements of this CARY-LIFT Loader, made by Pettibone Mulliken Corporation of Chicago, led to a thorough search for the best brakes available. According to the manufacturer: "Exhaustive tests proved to our entire satisfaction that Hi-Torque brakes were far superior to any other type available to us for our requirements."

The brakes on these Loaders provide gentle yet positive braking under all conditions, including operation with very heavy loads in snow, mud, and other adverse conditions. In addition to superior braking power, the manufacturer reports simplified assembly operations through standardization on Hi-Torques.

Investigate Hi-Torque brakes for maximum controllability and safety on your heavy-weight off-road vehicles. Now available on several makes of Loaders, Trucks, Tractors, Scrapers, Mine Vehicles. For information ask your vehicle manufacturer, or write *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Dept. PQ-10, Troy, Ohio.*



Full circle contact with drum is provided by Hi-Torque brakes giving maximum effective braking surface in the same size unit. Hi-Torque stops vehicles twice as fast as conventional brakes.

B.F.Goodrich **Hi-Torque brakes**

Enter 1 on card, page 177

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"Its simplicity sold us"

"When we buy pit equipment, we put clean design and simple maintenance at the top of the list. We know from experience that the most *trouble-free* machine is the one that's *most profitable* for us. That's why 3 of our 4 cranes are now AMERICANS." So says Art Hintz, who manages Waukesha Block Co., Inc., of Waukesha, Wis.

And he's right. Take their 500 Series excavator shown here . . . rugged, accessible, completely modern. Standard anti-friction bearings at all important points. Grouped, easily accessible lube points. Outboard bearings for rigid shaft support. Dependable, easy-to-operate graduated air controls.

Investigate AMERICAN, the all-modern crane that knows how to take care of itself!

CC-741

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AMERICAN

AMERICAN HOIST and DERRICK COMPANY
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PIT and QUARRY

OCTOBER 1961
Vol. 54 No. 4

DEPARTMENTS

Washington News Letter . . 11
Labor Developments 13
Screenings 15
News of the Industry 23
Coming Events 23
Industry Personalities 48
New Machinery 58
Legal Decisions 141
Manufacturers' News 158
More Information Please . . 177
Index to Advertisers 214

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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

In this Issue—

EDITORIAL

✓ Cleaner Air Week . . . . . Walter E. Trauffer 77

PLANTS

✓ New Haven Trap Rock Expands at North Branford . . . . . Buren C. Herod 78
Connecticut operation improved in efficiency, product flexibility; capacity raised 100 percent with new crushing, screening plants

Premium Markets Supplied from Shell Beds 100
Dredge "H. A. Sawyer" processes oyster shell through well-equipped plant

✓ Aggregate Producers Terminate One Operation—Start Anew in Another Field . . . . . Buren C. Herod 106
Exhaustion of reserves for older sand-gravel plant spurs development of new 500-t.p.h. crushed stone installation

Pittsburgh Plate Glass Cement Plant Served by Deepest Limestone Mine 112

✓ Small Operator Big in Ability . . . . . Buren C. Herod 120
Operating economy, deleterious material, feed control among problems solved by progressive producer

✓ Prestressed Concrete Conveyor Structure Snakes Downhill 1½ Miles to New Cement Plant of Calaveras . . . . . Harry F. Utley 126

ASSOCIATIONS

✓ N.S.G.A. and N.R.M.C.A. Controllers Exchange Pointers on Procedures . . . . . Buren C. Herod 85
Two-day conference sparked by intensive floor discussions

✓ N.S.G.A. Directors Meeting . . . . . Walter E. Trauffer 88
Public relations, tax matters, safety, research, 1962 convention discussed at White Sulphur Springs

MAINTENANCE

Drill Maintenance Program of Large Contract Drilling Firm 105

MANAGEMENT

What You Should Know About Agency Law . . . . . C. T. Medlock and R. D. Stevens 137

OPERATING

FM Radio Solves Many Problems in New York Trap Rock Quarries 94
Better intraplant communication; reduced operating costs; safer, more efficient blasting; operating flexibility achieved

SAFETY

Winning Operations Announced In 1960 N.C.S.A.-Mines Bureau Safety Contest 40

The National Safety Competition of 1960 46
Record number of injury-free operations reported by mines and quarries entered in latest contest

The ABC's of Safety . . . . . H. E. Carroll 98
Fundamentals must be learned and applied if plant accident rates are to be reduced

✓ *Indicates a* PIT AND QUARRY *staff-written report*

NO MAJOR REPAIRS IN 25 YEARS*

Sturtevant Construction Assures Long Mill Life at Top Loads

Sturtevant crushing and grinding machinery answers the long life top-load production problem for medium to small size plants. Many Sturtevants have been operating above rated capacities for more than 25 years, and *without a major repair.*

"Open-Door" design gives instant accessibility where needed — makes cleanouts, inspection and maintenance fast and easy. Machines may be set up in units to operate at equal quality and capacity.

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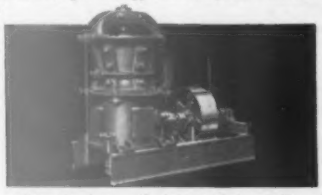

Rotary Fine Crusher — Reduce soft to medium hard 3 to 8 in. material down to ¼ to 1¼ in. sizes. Capacities up to 30 tph. Smallest model has 6 x 18 in. hopper opening; largest, 10 x 30 in. Non-clogging operation. Single handwheel regulates size. *Request Bulletin No. 063.*

Crushing Rolls — Reduce soft to hard 2 in. and smaller materials to from 12 to 20 mesh with minimum fines. Eight sizes, with rolls from 8 x 5 in. to 38 x 20 in.; rates to 87 tph. Three types — Balanced Rolls; Plain Balanced Rolls; Laboratory Rolls — all may be adjusted in operation. *Request Bulletin No. 065.*

Hammer Mills — Reduce to 20 mesh. Swing-Sledge Mills crush or shred medium hard material up to 70 tph. Hinged-Hammer Pulverizers crush or shred softer material at rates up to 30 tph. Four Swing-Sledge Mills with feed openings from 6 x 5 in. to 20 x 30½ in. Four Hinged-Hammer Pulverizers with feed openings from 12 x 12 in. to 12½ x 24 in. *Request Bulletin No. 084.*

**Reports Manager W. Carleton Merrill concerning Sturtevant Swing-Sledge Mill at James F. Morse Co., Boston.*

STURTEVANT
MILL COMPANY
104 Clayton St., Boston 22, Mass.

Enter 4 on card, page 177

pit and quarry

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Enter 5 on card, page 177 →

Making LITTLE ONES out of BIG ONES!

ONE of the chief problems that Superior Stone Company of Raleigh, North Carolina, faced at King Mountain was that of loading on four levels. Making little ones for the shovel to handle out of big ones called for an 8000 lb. drop ball — moving a crawler rig from level to level was obviously not practical.

Superior solved the problem with a Northwest 35-ton Wagon Crane. Its high stability let it handle the drop ball without setting outriggers. It easily changed position on location, and extreme mobility permitted movement from one level to another in a matter of minutes.

This is a high production operation that requires the maximum utilization of equipment. The Northwest Wagon Crane keeps the rock face and floor clean and level, making shovel operation easier, safer and more profitable.

Superior Stone Company is an old Northwest user. The machine pictured is the 77th Northwest they have bought. There is no better guarantee of the kind of profitable performanee you will get if you put a Northwest on *your* job.

77 NORTHWESTS for SUPERIOR STONE CO. Raleigh, N. C.

NORTHWEST ENGINEERING COMPANY
135 South LaSalle Street • Chicago 3, Illinois
1515 Field Bldg.

C-41-23-5

NORTHWEST

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES
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PULLSHOVELS	TRUCK CRANES
¾ Yd. to 2½ Yd. Capacity	25-Ton and 45-Ton Capacity

3/4 to 3 Cubic Yard Capacity

100,000-MILE WARRANTY FOR SUPER DUTY V-8's

THEY'RE HERE!

NEW '62 FORD TRUCKS

Get full-time economy that only starts with Ford's low price!

Meet the trucks that make saving money a full-time business—new Ford Trucks for '62!

In a selection of over 600 models there's a truck that's right for your job, whatever your job . . . trucks that you can buy and operate at lower cost . . . trucks that can save you money mile after mile, load after load, year after year!

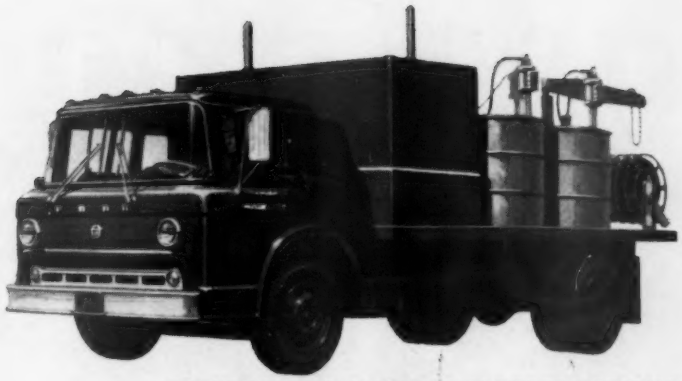
They save on price. They save on gas and oil. They save on tires and on maintenance—wherever there's a way to save! The full record of Ford economy, covering three years of independent tests, is detailed in Ford's Certified Economy Reports. See your Ford Dealer now. Check out the facts, work out a deal, and drive out a truck that saves money . . . full time!

FORD TRUCKS COST LESS

SAVE NOW...SAVE FROM NOW ON!

ECONOMICAL HEAVY DUTY V-8's with 292-, 302- and 332-cu. in. displacement give you tailored-to-the-job economy at much lower prices than you would expect in trucks with engines of this size. Stress-relieved cylinder heads, aluminum alloy pistons and sodium-cooled exhaust valves are but a few of the heavy-duty features you get with these engines.

EXCLUSIVE 100,000-MILE WARRANTY on 401-, 477- and 534-cu. in. Super Duty V-8's is the most liberal in the industry. Each major engine part (including block, heads, crankshaft, valves, pistons, rings), when engine is used in normal service, is warranted by your dealer against defects in material or workmanship. The warranty covers full cost of replacement parts for 100,000 miles or 24 months (or 3,000 hours if used as a power source for other than propelling the vehicle), whichever comes first . . . full labor costs for 50,000 miles, 12 months or 1,500 hours, sliding percentage scale thereafter.



PROVEN 262-CU. IN. BIG SIX FOR FORD MEDIUMS includes more heavy-duty engine features than any other Six of its size. Never before such long-term durability, reliability, and economy at so low a price.

NEW STYLESIDE BODY FOR 4 X 4 PICKUPS—Ford's rugged 4-wheel drive models are now available with a cab-wide Styleside box that provides over 70 cubic feet of loadspace. Flareside body with running boards is also available.

HEAVY-DUTY CAB, RADIATOR AND SHEET METAL—All Ford Tandems utilize heavy gauge steel, sturdy reinforcements and independent mounting systems to separate radiator, fenders and cab. This stronger construction, with each component individually frame-supported, gives long life, reduces maintenance expense and cuts downtime.

PRODUCTS OF Ford MOTOR COMPANY

6-cylinder 94* engine h.p. JOHN DEERE 4010

*Diesel; 92 eng. h.p. Gasoline

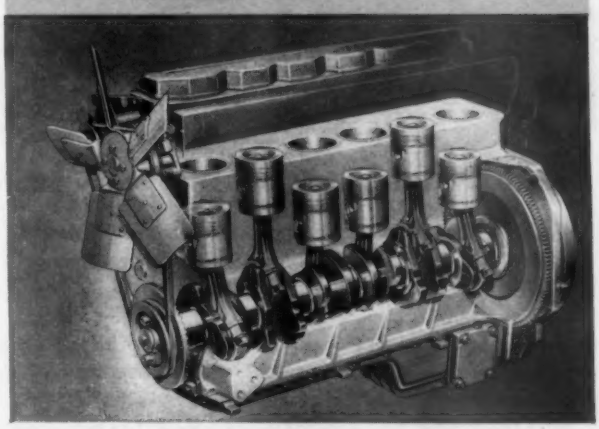
NEW POWER FOR THE LONG PULL

Designed for big work output at blade and drawbar, bucket and powershaft, the new John Deere "4010" has both the reserve power and the flexibility that fast-paced construction schedules require.

Two large-capacity hydraulic systems speed stockpiling and material handling with the "4010" Loader. Smooth power braking in both directions, and power steering are supplied by a central, constant-pressure system. Bucket and lift arms, operated by single-lever control, are powered by separate, constant-volume pump.

Well-adapted for a wide variety of work with rear-mounted equipment, the "4010" delivers top performance from tampers and rollers, soil-cement and bituminous mixers, harrows and other specialized tools. Optional three-point hitch precisely controls cutting depths with mixers and disks. Independent power take-off available as special equipment: Rear switches from 540 to 1000 RPM in seconds; front is for 1000 RPM only. Wide-swing heavy-duty drawbar or standard drawbar adjustable for length and height meet all requirements. PTO and hydraulic controls are arranged for easy reach from comfortable, back-supporting seat.

Exceptionally heavy construction of the 6-cylinder engine is marked by a high-inertia, 150-pound, forged steel crankshaft with seven main bearings, solidly supported by interior webbing. Pan is a one-piece casting providing extra rigidity and engine protection. Pistons are aluminum alloy for rapid heat dissipation: special for each fuel type. Forced engine ventilation, exhaust valve rotators, full-pressure lubrication, and replaceable cylinder sleeves surrounded by coolant improve operation, increase engine life. Constant-mesh transmission, 8 speeds forward, 3 reverse.



To arrange for a demonstration, and obtain facts on the John Deere Credit Plan and long-term leasing, see your dealer. Check the yellow pages.

John Deere, 3300 River Drive, Moline, Illinois

JOHN DEERE LOADERS BULLDOZERS BACKHOES AND EARTHMOVING EQUIPMENT

JOHN DEERE

Some things can't be shipped in this new bag

But they are the exception. For this is the new Balex™, West Virginia's rugged, single ply, economical shipping container for a host of commodities . . . in pockets or bulk.

With usual savings ranging from 8 to 12% (and even more depending on the type of container replaced), an increasing number of companies are using Balex to help solve the cost-price squeeze problem.

Balex solves other problems too. For example, The National Sugar Refining Company selected Balex as a master shipping container for their Jack Frost, Quaker and Godchaux cane sugars. In a check of 52 carloads shipped in Balex containers of 1/110# construction, damage was substantially less than with the 2/70# conventional kraft balers they replaced.

Balex containers are made from an extra-heavy Clupak* extensible paper, newly developed by West Virginia. Also available in wet strength, polyethylene coated, and embossed for extra nonskid protection.

For detailed information on Balex or Wonderwall Bags, write Multiwall Bag Division, West Virginia Pulp and Paper Company, 230 Park Avenue, New York 17, N. Y.

West Virginia Pulp and Paper

*Clupak, Inc.'s trademark for extensible paper manufactured under its authority and satisfying its specifications.

Washington News Letter

By S. HERBERT UNTERBERGER

WASHINGTON is preoccupied with the assignments which Mr. Khrushchev is handing out and will, no doubt, continue to be so engaged for months and even years. Fortunately, the domestic economy is sufficiently far along the road to recovery that its problems can be relegated to second place for some time without serious consequences. Indeed, the world tensions which are forcing Congress to appropriate funds with a relatively free hand are virtually guaranteeing boom times.

Several economic consequences can almost be guaranteed.

First, almost everyone concerned with the problem is assuming an acceleration in the rate of increase of the price level. This is another way of saying that inflationary pressures are almost certain to rise.

Second, when this happens, counter-inflationary measures will have to be taken, most of which are in the area of credit restriction. The necessary result will be a rise in interest rates.

Third, some resources which are already fully utilized (or close to that), such as certain types of skilled labor and certain types of manufacturing facilities (*e.g.*, electronic computers), will be in exceedingly short supply.

Fourth, the already high wage rates of those types of skilled labor will probably go higher. Particularly because of the board coverage of industrial-type labor unions, the wages of other even loosely related classes of labor will probably also rise, although perhaps not quite as much.

Fifth, the prices of a growing list of commodities in short supply will rise both officially, as shown by their price lists, and even more frequently unofficially, by the imposition of charges for special orders, shipping, or the necessity of buying through unfamiliar middlemen.

All this means that the best estimating done currently indicates that the international situation is tending to speed the upward phase of the business cycle. It is, of course, possible that an unexpectedly rapid change in that situation will also speed up the date for the turnaround into the downward phase. However, this is not foreseen at the moment.

Accordingly, it would appear that businessmen would be well advised to increase their buying commitments now, postponing as far as possible their selling commitments. The fact that many have taken this advice does much to explain a recent rapid rise in the purchases of equipment, such as machine tools, and even the rise in construction contracts for new buildings. It also explains the pressure toward closing new union agreements, although the improved wages and other benefits may be larger than previously anticipated. Recent events in the automobile industry support this conclusion.

Although there is some uncertainty about the timing of some of the other anticipated price changes —in the price of materials and commodities, in the price of labor, etc.— it is virtually certain that the price of borrowing money, the interest rate, had already begun its upward climb. In businesses having interest payments that constitute a significant cost, efforts are now being made to complete forward financial arrangements, so as to beat the rise. At the same time, the lending establishments and agencies are reluctant, and only the best risks or the most valued accounts are not being delayed. This holding back, in itself, serves to accelerate the trend, since the less preferred risks are in the situation of being required to offer higher prices, which are already beginning to take the form of bonuses.

Overall, the economic situation has the outward appearance of health, with no reasonable certainty about the future; it is somewhat like the ruddy complexioned man who has a serious heart condition.

An interesting report recently came out of the Bureau of Labor Statistics in Washington on the labor requirements for highway construction. The Bureau has tried to answer the question, "How many man-hours of labor are required for each $1,000 of highway construction expenditure?" Statisticians were interested not only in the labor used at the construction site but also the labor used elsewhere—in manufacturing the products used at the construction site, in transporting those products, etc.

They came up with a figure of 219 hours of labor used for every $1,000 of highway construction expenditure. It was especially interesting that only a small part of this total—94 hours—was used at the construction site; most of it—125 hours—was made up of off-site employment. These two figures were broken down further, as follows:

The 94 hours of on-site labor include about:

- 40 hours for equipment operators, truck drivers, and crafts associated with equipment operation
- 31 hours for unskilled occupations

(*Concluded on page* 71)

These Special Excavating Jobs Are Best Handled by Sauerman DragScrapers

Deep Digging

900-FT. SPAN— 65 FT. BELOW WATER...

Load is deposited by tensioning the track cable, thus lifting the DragScraper from the pile. Tensioning continues to the desired height for releasing the DragScraper and returning it by gravity to the pit.

Operator controls digging and hauling from cab in head tower.

"the 10-yd. DragScraper is doing a wonderful job and we could not operate without it..."

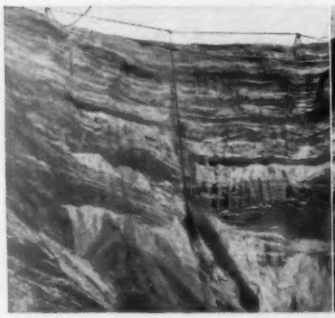
Louis Chinelli, Gen. Supt.
Redman Concrete Corp.

Redman had been trucking material at a cost of $35,000 a year to the location where the DragScraper is now placing it. The 10-yd. Sauerman covers a pond area of 1500′ by 3000′ and is digging 40 ft. deeper than their previous dragline could operate.

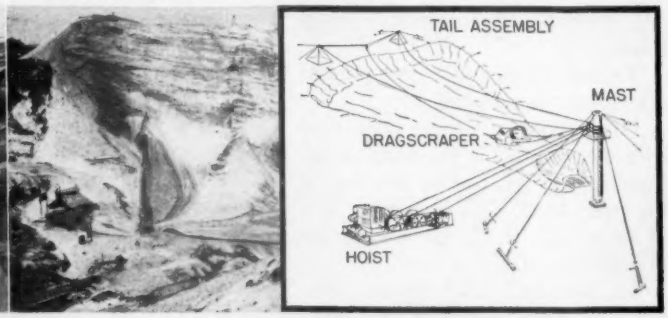
The DragScraper digs and hauls on a 900-ft. span. It operates between a 90-ft. fixed head tower and a 40-ft. mobile tail tower which may be shifted to change the line of operation. The company's 1000-yd.-per-day batch plants and its fleet of mixers and trucks are kept busy by the steady flow of material supplied by the DragScraper.

High Bank Digging

175 FT. HIGH— 600-FT. HAUL...



DragScraper digs from high bank.



Overall view shows height and steepness of bank. Diagram shows details of Sauerman installation.

"I have nothing but praise for our 4-yd. Sauerman Machine. Since the DragScraper began operations in 1952, we have worked it continuously 12 hours a day..."

John D. Robertson, Gen. Supt.
Chandler's Palos Verdes Sand & Gravel Co.

By working down from the top of the 175-ft. bank, the material flows ahead of the DragScraper. This provides bonus loads on each haul and substantially lessens the danger of cave-ins.

Operating cables are powered by a Sauerman three-drum electric hoist. Equipped for rapid shifting, the DragScraper can be quickly positioned to any line of operation between the two tail towers at the top of the bank and the headpost at the hopper.

The plant is the largest sand producer in the South Los Angeles area and, together with two ready-mix plants, keeps 22 ready-mix and 18 dump trucks busy.

The best Sauerman Machine for your plant is governed by the nature of the deposit, location of material, the depth and plant layout. Consult Sauerman engineers about your plant. Their recommendations will be based on fifty years of excavating machinery experience. Ask for Catalog A (DragScrapers). Sauerman News Nos. 149 and 150 describe the above installations in greater detail.

SAUERMAN BROS. INC. 634 SOUTH 28TH AVENUE • BELLWOOD, ILLINOIS

CRESCENT SCRAPERS • SLACKLINE and TAUTLINE CABLEWAYS • DUROLITE BLOCKS

Labor Developments

THE most significant labor development this year, and perhaps for some years to come, is the agreement between the American Motors Corporation and the United Automobile Workers of America. Regardless of how many of its features are finally included in this year's agreements with the other automobile manufacturers, it is virtually inevitable that, in the not too distant future, they will find their way into many labor agreements both within and beyond the automobile industry. It is no secret that American Motors expects the automobile giants to follow its labor relations model just as they followed its compact car model, although it may take a few years to catch up.

The special importance of this agreement is not its liberality. Many others have provided larger wage and benefit improvements. More significant is the fact that it sanctions a large number of arrangements which, up to now, were either included despite strong and lengthy protest or were regarded as beyond the range of collective bargaining. It legitimatizes demands and concessions in formerly forbidden areas.

The first, and perhaps now the least controversial is the full recognition of the principle that workers' standards of living should rise year by year. This was accomplished by again incorporating into the agreement a 2½ percent "annual improvement" factor with the minimum of 6 cents per hour. This feature, or something like it, has been in automobile industry contracts since it was first introduced in the late 1940's by General Motors.

What makes its re-inclusion in this contract significant is that this

By S. HERBERT UNTERBERGER

S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D.C.-Philadelphia, Pa.

happened over the protest of American Motors. The company was willing to give an equivalent increase but wanted to eliminate the "annual improvement" label. But the union would not yield, and American Motors gave in. Not only was the increase given, but more importantly, it was conceded that automobile workers (inferentially, all workers) are entitled to increases in their living standards roughly paralleling the improvements in the nation's productivity.

Also retained were the quarterly cost-of-living wage adjustments related to movements in the Consumer Price Index. This is another clause which American Motors wanted to drop but was persuaded to keep. In the automobile industry, this feature, too, goes back to the 1940 General Motors agreement. Its continued inclusion for these many years implies tacit, if reluctant, agreement that it is the employers' responsibility to guarantee that the employees' standard of living will not be eroded by inflation.

Such requirements, presumably, give employers a large stake in the stability of prices and might be expected to encourage them to support measures designed to assure such stability. To date, there is little evidence of any such response. Perhaps, with recognition that cost-of-living escalator clauses constitute a permanent feature of their wage agreements, they will now take a greater interest in this subject.

Not only does this agreement continue to recognize the employer's responsibility for guaranteeing living standards of employees currently working for him, but it also moves further toward recognizing the employer's responsibility for guaranteeing reasonable living standards for the employees he has laid off.

Thus, the agreement includes a provision which raises supplemental unemployment benefits sufficiently so that, together with unemployment insurance, the employee will receive 62 percent of his gross pay plus $1.50 per week for each dependent up to four. Of course, 62 percent of gross pay is a larger proportion than net pay after deductions. In view of the fact that no income tax is payable on most of these payments, or even all of them, at least in the early weeks of unemployment, no serious decline in living standards is likely to occur. Also, the maximum amount payable as supplementary unemployment benefits is increased from $30 to $40 a week, and the duration is extended from 34 weeks to a full year.

A new feature has been added for workers who are sent home early in work weeks for which the full 40 hours had been scheduled. Such a worker will be paid one-half of his normal wage for each hour he loses. By accepting this feature, American Motors has acknowledged responsibility for scheduling its production so that it may fully utilize the manpower which it reserves. For many years, unions have tried to convince management that this is its responsibility. The principal major industry in which they have succeeded in obtaining management acceptance of this principle is in meat packing. Now they have broken through in the automobile industry. Other breakthroughs may be expected soon.

The most dramatic breakthrough occurred in the newly agreed upon

(*Continued on page* 66)

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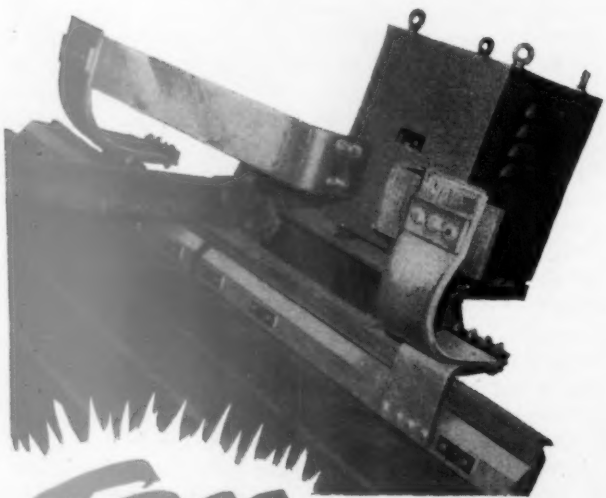

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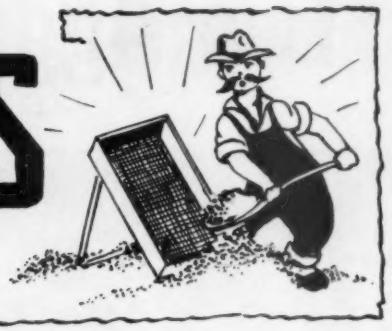


By RAY L. SMITH JR.

ACCORDING to another one of those recent "studies," the husband is lord and master in only twenty-two percent of American homes.

Don't you find this alarming? Either men are becoming weak or women stronger—or both.

Rule by woman, "momism" or whatever you may call it, has been creeping up on the sleepy male the past twenty years . . . and he just shrugs and ignores the danger signals.

Is this growing submissiveness on the part of the male an admission that the poor, defenseless females are—after all—smarter—superior?

We think it's high time for all gentlemen to renew their aggressiveness. Perhaps you should form a "human society"—dedicated to the preservation of manhood.

What makes women bossy?

Responsibility . . . especially responsibility that ordinarily belongs to a man. Perhaps it's because women resent having to be what they are not and, yet, at the same time they like the power. So, what women didn't want to do in the first place, they overdo out of spite and become bossy.

The American home—and younger generation—needs the male voice of authority. No matter how you look at it, women still depend upon (or want to) their menfolk for protection, guidance and leadership . . . and if the male does not accept this responsibility—the leadership which is rightfully his—he is undermining malehood.

The fact that only twenty-two percent of us are ruling the roost pretty well indicates our failure to accept the role as head of the house.

It's a sad situation—let's hope there are enough strong men around to prevent a state of "rule by woman."

It's just not fittin'!

Potpourri and Succotash

Seasoned executive: The boss who takes all employees' remarks with a grain of salt.

Ed: "I'd like to stop off and have a drink with you, but I have to go home and explain to the wife."

George: "Explain what?"

Ed: "How do I know? I'm not home yet."

A beatnik is a person who doesn't know where he's going, or what he'll do when he gets there, except write a book about it.

Girl: "I'll die if you don't kiss me."

Boy friend: "Boy that really presents a problem! I'm torn between love and duty."

Girl: "And just what do you mean by that!"

Boy friend: "I'm in the undertaking business!"

A woman well on in years entered a drugstore and asked the clerk, "Have you any cream for restoring the complexion?"

"Restore?" asked the clerk with surprise. "You mean preserve."

So he sold the woman $18 worth of cosmetics.

Golfer in rough: "Never mind my ball, caddie. Come and find me."

There's nothing like a good, old-fashioned, home-cooked meal—not in most homes at least.

Shoe salesman to woman customer: "Let's start with the larger sizes and work down until we get that stab of pain we're looking for."

Bachelor—A man who never makes the same mistake once.

A prominent horse-racing enthusiast recently called on a psychiatrist.

"I'm afraid my wife's off her rocker," he began. "She thinks she's a thoroughbred. Snorts and whinnies; sleeps standing up; ate up half of the front lawn the other day, etc."

"Now, don't get excited," soothed the psychiatrist, "it's probably just a reflection of your own way of life. Just bring her in tomorrow afternoon."

"Sure thing, doc," grinned the caller. "I'll trot her over about 2:00 p.m."

A man perched atop one of Atlanta's buildings contemplating suicide, and a policeman had made his way to the roof of the building to try to persuade the guy not to jump.

"Think of your father and mother," pleaded the officer.

"Haven't any," was the reply.

"Then think of your wife and family."

"Haven't any."

"Then think of your girl friend."

"I hate women!"

"All right. Then think of Robert E. Lee."

"Who is he?"

"Jump, you damn Yankee."

Jimmie was the center of an admiring crowd after he had rescued a playmate from an icy pond.

"You wonderful boy," exclaimed one woman. "Tell us how you came to be so brave and save your friend."

"I had to," said Jimmie, "he was wearing my skates."

Two Aggregate Plant Owners

966 WITH A 4-YD. LIGHT MATERIAL BUCKET LOADS 25% FASTER, WORKS MORE STOCKPILES

CRUSHED ROCK PRODUCTS, INC., Schenectady, N. Y., wanted a dependable, big-capacity wheel loader for their two-shifts-a-day limestone plant. They bought a new 140 HP* Cat 966 Wheel Loader. Results? "It's doing better than we had hoped," says Plant Supt. Carl Alger. "Production's up 25% over our elevating bucket loader, and the 966 can run from one stockpile to another in a hurry."

Alger's satisfaction is no surprise. Other plant owners report low-cost high production is routine with the 966 because Cat power shift transmission, automatic bucket positioners and power-boosted steering and brakes do all of the heavy work, make the operator's job easier. Fast cycle time is maintained from the beginning to the end of each shift.

Power shift gives him instant shifting, forward and reverse, first and second speeds. Dual ratio steering, exclusive on the 966, boosts production too. In work range the operator can make a full turn with only a half whirl of the steering wheel—makes speedy loading cycles easy; for fast travel between stockpiles, or on the highway, the travel range gives safe, automotive steering response.

Production—good; availability—good; and how about maintenance? Operator Jim Galusha reports everyday maintenance takes only five to ten minutes. He adds that it's easy to climb on and off the wide-open 966—a handy feature when you're on and off a machine all day long. "Visibility," he says, "is excellent even with the big 4-yd. special bucket."

Enter 16 on card, page 177

Report on Cat Wheel Loaders

944 FEEDS HOPPER—600-FT. ROUND TRIP IN 57 SECONDS—LOADS TRUCKS, DOES UTILITY WORK

BURBANK ROCK COMPANY, Ponca City, Oklahoma, needed a fast-moving general-purpose wheel loader to feed their screening-washing system and load out finished product. Their Caterpillar Dealer recommended the 944 with a 2-yd. bucket. Leo York, plant superintendent, reports they use the 944 about half the time to charge a hopper with ½-in. limestone chips for screening and washing. The rest of the day the 944 loads trucks from stockpiles, moves equipment around the plant and does general maintenance work.

The 944's profile tells you it's the machine to handle many jobs. Bucket lift arms and cylinders are forward, giving the 944 the reach and lift for easy loading of hoppers, trucks or railroad cars. Operators push the 944 hard, too, because they're not bothered by mechanisms raising and lowering beside them. Never have to worry about a load spilling back on them, either.

The 944 is powered by a thrifty, 105 flywheel horsepower turbocharged Cat Diesel Engine, with a gasoline engine optional. The same option applies to the 80 HP* 922.

One common equipment requirement of aggregate plant operators is machine endurance. You want low-cost, long-time, fast production without maintenance headaches. That's why more and more plant operators rely on Cat Wheel Loaders. If you need a powerful loader with fast wheel mobility and a wide range of bucket sizes, check with your Caterpillar Dealer. He'll solve your loading problems for a long time to come.

* All horsepower specifications are flywheel ratings.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Enter 17 on card, page 177

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

What you should know about conveyors

Move More Tons...

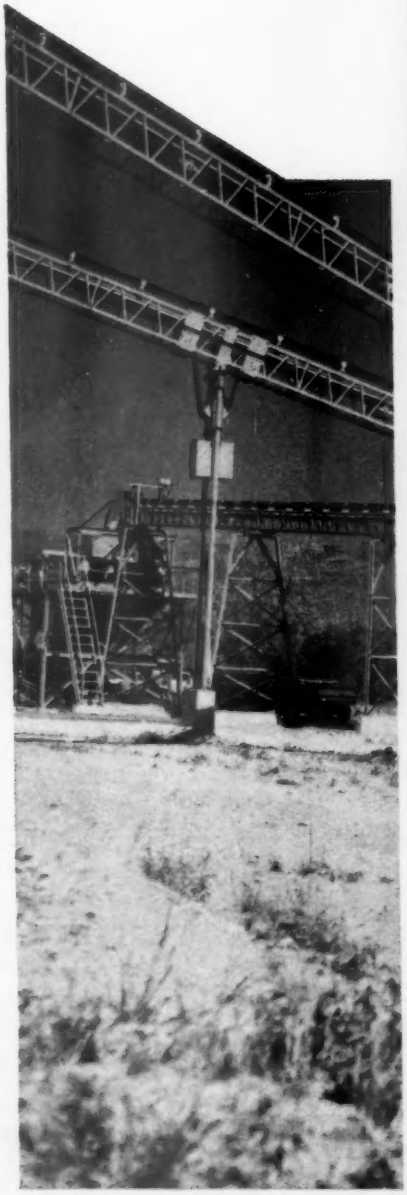
What's the first thing to look for in conveyor design? — *Strength* and *rigidity* to handle today's high hourly tonnages. Rugged truss design of Cedarapids "Strigid" conveyors, with diagonal angle-steel side bracing the full depth of the truss gives extra strength without extra weight, permits longer spans between supports with no sacrifice of stability. Wide use of clamp-on, hook-on mountings eliminates the need for structure-weakening bolt holes. "Strigid" conveyor frames are engineered for rigid structural stability to support the load without weaving or bucking. Strong rectangular end frames, reinforced at each corner with gusset plates and securely fastened with 4-bolt connections, resist distortion and add rigidity to joints. Lateral cross bracing between side members assures extra resistance to wind sway.

What are the benefits of "true alignment"? — Truly accurate alignment simplifies training the belt and increases belt and roll life. "Strigid" conveyor components are built on special fixtures and jigs and jig-welded for the perfect alignment that comes with structural strength and rigidity.

Are there advantages in modular design? — Yes, money-saving advantages. Standardized, interchangeable "Strigid" components are pre-engineered at the factory. Order the components you need "off the shelf." They arrive on the job pre-fit for perfect alignment, tailored to your requirements. Initial cost is less, too. Savings that come from mass production of standardized units are passed on to you.

How much does "special" engineering cost you? — Nothing, when you install Cedarapids "Strigid" conveyors. There's no cost or delay for special engineering, special drawings or calculations. Erection is fast and easy. Additional modular components can be delivered immediately to extend or alter your conveyor system in the field with minimum time and cost.

Is ordering a "Strigid" conveyor easy? — There's nothing simpler. Standardization of parts and a simplified selection procedure make it possible for you to select the components and order them yourself. Or your Cedarapids Man will quickly prepare a quotation based on your material handling needs.



...at lowest cost per ton

CEDARAPIDS "STRIGID" CONVEYORS

Cedarapids "Strigid" lattice frame conveyors meet every demand for fast, *low cost* moving of big tonnages of material from crushers and screens to stockpile or trucks. Find out how a low investment in "Strigid" benefits will bring in more profit dividends to your operations. Ask your Cedarapids Dealer for the complete "Strigid" conveyor story, for both stationary and portable plants.

Cedarapids — Built by IOWA

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CONVEYOR SELECTION AND ERECTION MADE EASY
SEND FOR THESE COMPANION BULLETINS TODAY

Bulletin CON-2 gives detailed descriptions of "Strigid" conveyor modular sections, pulleys, drives, troughing and return rolls . . . plus accessory equipment such as belt wipers, gravity take-ups, supports, walkways, etc. Its companion Bulletin CONS-1 is a Conveyor Selection Manual, containing all the information you need to select your pre-engineered conveyor components "off the shelf." Basic charts and tables, lists of lengths, widths, drives, horsepower and other data are at your fingertips. Send for both Bulletins today.

IF THE JOB CALLS FOR A SINGLE ROLL --PENNSYLVANIA'S GOT IT

Only Pennsylvania offers you this range of Single Roll Crushers —permitting precise job-engineering of the exact machine for your application.

Pennsylvania Single Rolls furnish the most economical, efficient reduction method you can get for primary and secondary crushing of a wide variety of materials—including cement rock, gypsum, limestone, mine refuse, barytes and other friable ores, shale, slag, chemicals and phosphate rock.

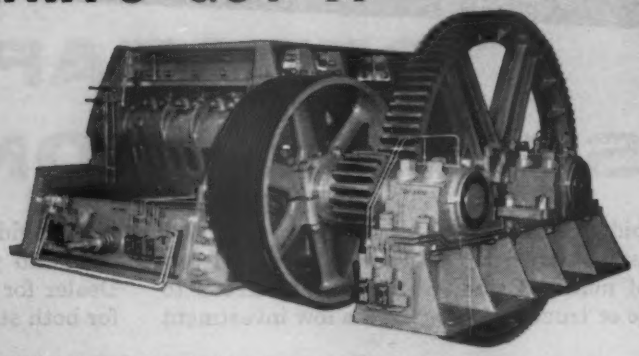
Combining a slow speed operation with high capacities (up to 1200 TPH), all models feature *extremely low maintenance and operating costs.*

Pennsylvania Single Rolls require very little headroom, can be choke fed, and will handle wet, sticky or frozen feeds without showing noticeable decrease in capacity.

FREE BULLETINS

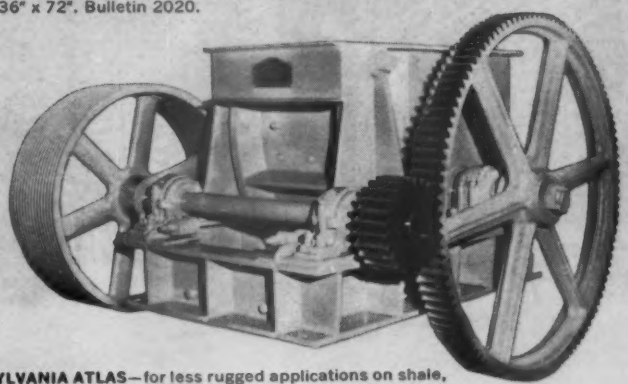
Write for Pennsylvania Single Roll Bulletins, fully describing the many design features, operating advantages and application information on these famous "work horses."

PENNSYLVANIA CRUSHER DIVISION
BATH IRON WORKS CORPORATION
WEST CHESTER, PENNA.



PENNLEHIGH—recommended for primary crushing of cement rock, limestone, gypsum and other friables to a nominal 6-8" product in one pass. Capacities to 1200 TPH. Sizes to 48" x 72" Bulletin 2011.

PENNSYLVANIA HERCULES—for heavy-duty primary or secondary crushing of cement rock, gypsum, mine refuse, coal with rock, limestone, ores, slag, etc. Capacities to 1200 TPH. Sizes to 36" x 72". Bulletin 2020.



PENNSYLVANIA ATLAS—for less rugged applications on shale, slate, coal, fire clay, soft gypsum, soft limestone, chemicals, etc. Capacities to 660 TPH. Sizes to 30" x 60". Bulletin 2025.

PENNSYLVANIA
BATH-BUILT
CRUSHERS

This mark tells you a product is made of modern, dependable Steel.

TIGER ON THE SPOT AT LEWISBURG LIMESTONE

Repeat performance. USS Tiger Brand Wire Rope worked so efficiently on this shovel that the owners plan to use it on all their equipment.

DIG, DIG, DIG—FOR DOLLARS

Fred and Ford Moss have a moneymaking operation digging limestone near Lewisburg, Tennessee. They bought an efficient shovel that scoops about 200 tons of stone an hour. It came equipped with USS Tiger Brand Wire Rope which Ford Moss describes this way, "Our hoist rope lasted longer than any rope we had ever used. We were beginning to think that it was never going to wear out. I can't tell you the exact number of tons it has produced but we're satisfied that it has dug up plenty of dollars for us."

The hoist rope is a Tiger Brand 1-inch 6x41 Lang Lay IWRC made of tough, abrasion-resisting Monitor Steel. Every day it stays on the job means more profit to the owners. The two men also have a motor crane equipped with a drop ball on the end of another Tiger Brand Rope for breaking rock.

Wire rope is an important factor on a job like this. It keeps the machines operating at a profit. Just multiply this by the size of your own operations and use Tiger Brand—to dig, dig, dig—for dollars!

For the latest book on USS Tiger Brand Wire Rope, **contact your local distributor** or write American Steel and Wire, Rockefeller Building, Cleveland 13, Ohio.

USS and Tiger Brand are registered trademarks

American Steel and Wire Division of United States Steel

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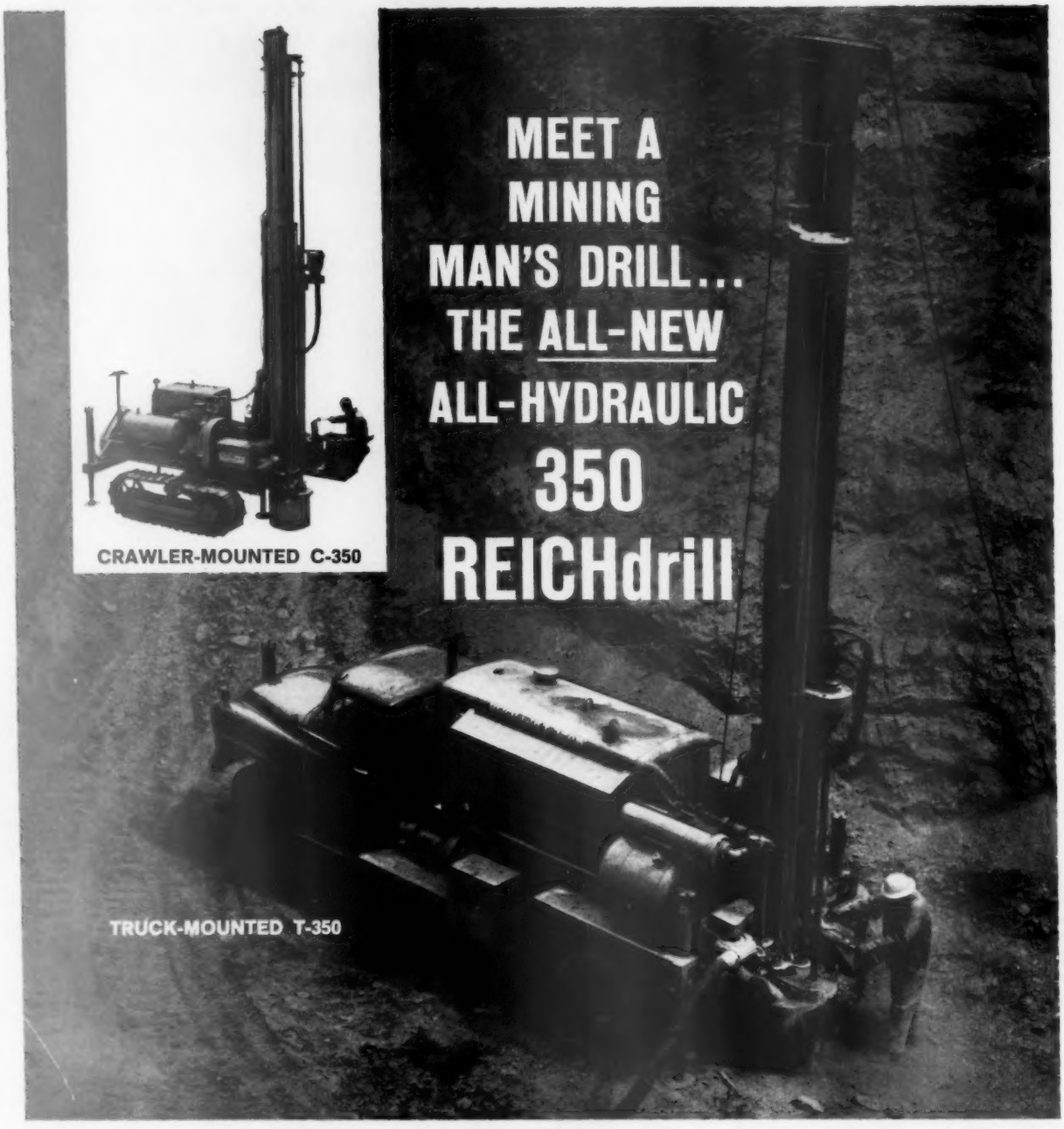


NOMINAL HOLE SIZE—1⅞" TO 5⅝" ● DOWN PRESSURE—10,000 LBS. ● ROTARY SPEED TO 540 RPM

Here's the ultimate in a mobile drilling rig for holes to 5⅝" ...the all-new 350 REICHdrill.

Job performance records under extreme drilling conditions have proved the cost-cutting advantages of its all-hydraulic features: Rotary Top-Drive; Precise Feed Pressure Control; Fast-acting Levelling Jacks.

The 350 moves in quickly...sets-up fast, breaks footage records on every shift. Handles 3-cone rotary bits, in-hole drills, diamond core bits, wire line tools, or drag bits.

C-350 Crawler-Mounted REICHdrill is unmatched for maneuverability and stability. Trams easily at almost 8 mph ...can climb a 25% grade...turn in its own length. Low center of gravity...wide tracks help it meet and beat any tough terrain.

T-350 W Truck-Mounted REICHdrill has all the time-saving, cost-cutting hydraulic features of the crawler-mounted unit. Offers complete mobility...saves schedule-killing time on moves between drilling sites.

Ask for SP-5001-2

REICHdrill
FRANKLIN (VENANGO COUNTY), PENNA.
Division: CHICAGO PNEUMATIC TOOL CO.

News of the Industry

Development of Quarries To Be Started by Flintkote At Flat Bay, N. F.

The Flintkote Company has awarded to the McNamara Construction Company of Newfoundland Limited, St. Johns, Canada, a contract to develop facilities at its Flat Bay quarries in Newfoundland.

The contract, for between $1.5 and $2 million, provides for the completion of a 6-mile aerial conveyor from the existing quarries at Flat Bay to Turf Point and the construction of pier facilities at Turf Point. A crushing building and related conveyor system also will be built at Flintkote's Flat Bay quarries. Work will begin at once and completion is expected during the next year.

Frederic R. Harris of Canada Limited, Toronto, will handle engineering for the pier, while Giffels and Valley, Windsor, Ont., will supervise the rest of the engineering.

Flintkote earlier this year signed an agreement with the Province of Newfoundland permitting Flintkote under a 99-year renewable lease, rights to develop gypsum deposits in the Flat Bay area having proven reserves of 45,000,000 tons of gypsum and subsequently to an area comprising nearly 3,000 square miles.

Two 14- by 80-ft. clinker coolers, the largest ever ordered for the cement industry, are now being constructed for the Atlantic Cement Company's new plant, now in the process of erection at Ravena, N. Y. The $700,000 contract was awarded to the Fuller Company.

$500,000 Refractories Plant Built by Basic, Incorporated To Supply Western Market

A new $500,000 special refractories plant was recently completed by Basic, Incorporated, in connection with its magnesite production operation at Gabbs, Nev. Refractory products for Basic's western markets, which formerly had to be shipped to the Maple Grove, Ohio, plant for processing, now will be finished at the new plant.

A 6-ft. by 48-in. Hardinge conical ball mill is being used in the new plant to dry-grind refractory grain magnesia which is produced in kilns at the Gabbs plant.

Flow of magnesia clinker into the mill from the feed bin is controlled by a constant-weight feeder. The plant also uses a 90-in. by 60-ft. Ruggles-Coles XF-14 rotary dryer.

Coming Events

October 2-3, 1961—Ottawa, Ont. Joint meeting, Industrial Minerals Divisions, Canadian Institute of Mining and Metallurgy and Society of Mining Engineers, American Institute of Mining, Metallurgical and Petroleum Engineers. Chateau Laurier.

October 4 and 5, 1961—Pocono Manor, Pa. Annual meeting, National Slag Association. Pocono Manor Inn.

October 5-6, 1961—Washington, D.C. Operators meeting, National Lime Association. Shoreham Hotel.

October 16-20, 1961—Chicago. Safety Congress, National Safety Council. Hilton, Pick-Congress, LaSalle, Sheraton-Chicago hotels.

November 13-17, 1961—College Park, Md. 16th annual Short Course for Industry Technicians, National Sand and Gravel Association and National Ready Mixed Concrete Association. University of Maryland.

January 15-19, 1962—Miami Beach. January meeting, National Limestone Institute, Inc. Roney Plaza Hotel.

February 5-9, 1962—Chicago. 32nd annual convention and biennial show, National Sand and Gravel Association and National Ready Mixed Concrete Association. Conrad Hilton Hotel and McCormick Place.

February 12-14, 1962—Chicago. Annual convention and machinery exposition, National Crushed Stone Association. Conrad Hilton Hotel.

February 18-22, 1962—New York. 91st annual meeting, American Institute of Mining, Metallurgical and Petroleum Engineers, Inc. Statler Hotel.

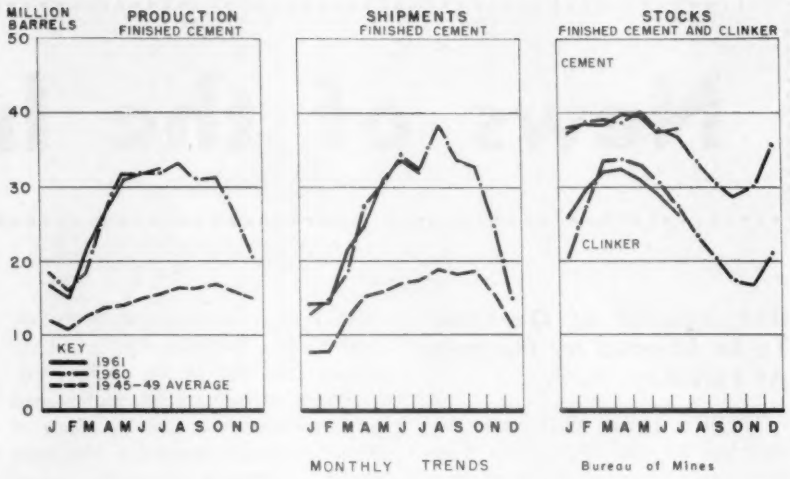
Construction Put in Place In August Up 1 Percent Above July Total

The value of new construction put in place in August, 1961, amounted to $5.4 billion, according to preliminary estimates of the U. S. Department of Commerce. This was an increase of about 1 percent above July, approximately the normal seasonal change. The amount spent for total new construction was 4 percent above August, 1960.

ITEMS: Private construction, estimated at $3.7 billion, was the same as in July, but 5 percent greater than in August, 1960. Private nonfarm-residential was estimated at $2.1 billion—about 1 percent less than in July, but 4 percent greater than in August, 1960.

ITEM: Public construction, estimated at $1.7 billion, showed the normal seasonal increase from July. It was up 4 percent, and was also 3 percent above August, 1960.

CUMULATIVE VALUE: New construction expenditures in the first eight months of 1961 were estimated to total $37 billion, compared to $36.1 billion in the same period last year. Total private construction expenditures, at $26.1 billion, were at the same level as last year, while private nonfarm-residential declined 4 percent to $14.5 billion, and total public construction increased 8 percent to $10.9 billion.



— July, 1961, Finished Portland Cement —

SUMMARY—Production of finished portland cement in July, 1961, as reported to the U. S. Bureau of Mines, totaled 32,511,000 barrels—an increase of 2 percent compared with July, 1960. Mill shipments totaled 31,753,000 barrels—a decrease of 3 percent compared with July, 1960. Stocks of 37,877,000 barrels of finished portland cement were 3 percent more than those on hand July 31, 1960. Clinker production totaled 29,162,000 barrels—about the same as in July, 1960.

►PRODUCTION—A total of 172 plants in 39 states and Puerto Rico reported production of 32,511,000 barrels, compared with 31,982,000 barrels in July, 1960.

Clinker production was 29,162,000 barrels compared with 29,125,000 barrels in July, 1960.

High-early-strength portland cement output totaled 1,090,000 barrels—an increase of 6 percent from the July, 1960, production of 1,032,000 barrels.

Prepared masonry cement production totaled 1,705,000 barrels, a decrease of 13 percent from the 1,955,000 barrels produced in July, 1960. Masonry cements are reported in 280-lb. barrels.

►SHIPMENTS—Mill shipments of finished portland cement from 176 plants totaled 31,753,000 barrels, compared with 32,674,000 barrels in July, 1960.

Shipments were higher in 9 and lower in 15 districts. The greatest increases were in the Oklahoma-Arkansas and Colorado-Arizona-Utah-New Mexico districts.

Shipments of high-early-strength cement totaled 1,161,000 barrels—a decrease of 3 percent from the 1,193,000 barrels shipped in July, 1960.

Prepared masonry cement shipments totaled 1,856,000 barrels—a decrease of 5 percent from 1,952,000 barrels shipped in July, 1960.

►STOCKS—Mill stocks of 37,877,000 barrels of finished portland cement were on hand July 31, 1961—an increase of 3 percent from 36,611,000 barrels on July 31, 1960. Stocks of clinker on hand July 31, 1961, totaled 26,189,000 barrels—a decrease of 5 percent from 27,532,000 barrels on July 31, 1960.

►FIRST SEVEN MONTHS OF 1961—For the January-July period, the production volume of finished cement amounted to 175,303,000 bbl., compared with 176,097,000 bbl. in the 1960 seven-month period. Total shipments for the first seven months of 1961 are reported at 171,462,000 bbl.; in the same period of 1960 total shipments were 169,268,000 bbl. (Shipment figures do not include finished cement used in the manufacture of prepared masonry cement, as follows: July, 1960—290,000 bbl.; January-July, 1960—1,584,000 bbl.; July, 1961—227,000 bbl.; January-July, 1961—1,509,000 bbl.)

Rocklite Starts 3rd Decade With Expansion Plans

An expanded research program and a search for new markets were announced by the management of Rocklite Products, Ventura, Calif., upon the occasion of the 20th anniversary of the firm's founding.

Among the items of equipment recently installed is a water-detergent dust suppression system in the crushing and screening department.

Current production is at the rate of 800 cu. yd. of lightweight aggregate per day.

New Cement Plant Map Now on Sale

The 1961 edition of the popular Portland Cement Plant map is now available. This new map shows all the existing producing and distributing plants in the United States, Canada, Mexico, and Puerto Rico, plus all plants under construction and expected to be completed by the end of 1962.

A total of 227 producing and 116 distributing plants are shown on this 33- by 44-in. map. All producing and distributing plants are listed alphabetically by city and state.

Production capacity is given for each producing plant. Future capacities are given, too, when the information is available.

Whether a plant is a wet- or dry-process plant is indicated. The brand name (or names) of each plant's product is also given.

You may obtain copies of this map by writing to PIT AND QUARRY PUBLICATIONS, 431 S. Dearborn Street, Chicago 5, Ill. The prices are as follows:

1-10 copies	$1.00 per copy
11-25 "	.75 " "
Over 25 "	.50 " "

Please send a check, money-order, or cash when you mail your order, to eliminate future billing.

Output, Shipment Down For Most Cement Types Produced in U. S. in 1960

Three classes of hydraulic cement were produced in the United States (including Puerto Rico) during 1960—portland, natural, and slag—as reported to the U. S. Bureau of Mines. In addition, prepared masonry cements were produced at 135 portland cement plants and 5 other cement plants.

PRODUCTION: Portland cement—6 percent less than in 1959, decreasing to 319,000,000 bbl.; prepared masonry cement—a 10 percent decrease from 16,200,000 bbl. in 1959 to 14,600,000 bbl. in 1960; natural and slag cement—an increase from 438,000 bbl. in 1959 to 568,000 bbl. in 1960.

SHIPMENTS: Portland cement—a decrease to 312,000,000 bbl., valued at $1,045,000,000 (average value of $3.35 per bbl.); prepared masonry cement—a decrease to 14,200,000 bbl., valued at $56,000,000 (average value of $3.96 per bbl.); natural and slag cement—an increase to 548,000 bbl., valued at $1,900,000 (average value of $3.56 per bbl.). Shipments of cement were lower into 32 states.

CEMENT USAGE—Responses (including estimates) were received from all producing plants, indicating that of the 312,292,000 bbl. of cement shipped, 55.9 percent were to ready mixed concrete companies, 13.6 percent to concrete product manufacturers, 12.5 percent to building material dealers, 10.5 percent to highway contractors, 4.9 percent to other contractors, 1.8 percent to miscellaneous customers (including the producer's own use), and 0.8 percent to federal and state government agencies.

ESTIMATED ANNUAL CAPACITY of all portland cement plants on December 31, 1960, was 3 percent greater than on December 31, 1959—or, a total of 432,941,000 bbl. The 12,600,000-bbl. increase was the result of expansions at 8 of the 171 in operation in 1959, and the addition of 5 new plants.

Less fuel of all types (coal, oil, and natural gas) was used during 1960, with coal and oil supplying 57 percent of the B.t.u.'s used, compared with 55 percent in 1959.

PRODUCTION BREAKDOWN OF PORTLAND CEMENT: General-purpose and moderate-heat (Types I-II), 93 percent; high-early-strength (Type III), produced at 135 plants, 6 more than in 1959. No portland-pozzolan cement manufacture was reported. Seven plants reported production of portland-slag cement.

Natural cement was produced at two plants and slag cement at two. A hydraulic-lime cement plant produced only masonry cement. These five plants reported annual capacity of approximately 1,000,000 bbl. One natural cement plant which formerly made only masonry cement was closed in 1960.

Plans have been completed for a $21,000 warehouse to be built in Seattle, Wash., by Ideal Cement Company at its plant.

25,000-T.P.Y. Installation Of Coalinga Asbestos Co. Gets 13 Gyratory Screens

Thirteen gyratory screens are to be installed in California's first large asbestos plant, scheduled for production early next year. The new venture, to be operated by the Coalinga Asbestos Company, near Coalinga, Calif., is the joint project of Johns-Manville Products Corporation and the Kern County Land Company. Chrysotile will be mined and processed at the rate of 25,000 tons per year.

The screens, to be supplied by Allis-Chalmers Manufacturing Company, will be used in the tail-end portion of the plant circuit in separating fibers from gangue. Ten of the units will be 11-deck screens and the remaining three will have 7 decks.

Provision will be made in the plant layout for the addition of 15 more screens.

Lime Sold and Used in June, 1961

Lime sold and used in June, 1961 (1,072,526 short tons), decreased compared with the previous month, according to reports by producers to the U. S. Bureau of Mines.

Decreases were reported in agricultural, chemical and other industrial, and refractory lime, whereas construction lime increased. Open-market lime constitutes 63 percent of the total lime reported; the remaining 37 percent is captive tonnage, according to the 1960 annual lime canvass.

Lime Sold and Used by Producers[1] in the United States, In Specified Periods of 1960-61, by Types and Major Uses in Short Tons

	May	June		January-June	
	1961	1961	1960	1961	1960
By types:					
Quicklime	891,982[2]	841,008	747,259	4,738,870	4,776,210
Hydrated lime	243,231[2]	231,518	241,132	1,269,240	1,346,154
Total lime	1,135,213[2]	1,072,526	988,391	6,008,110	6,122,364
By uses:					
Agricultural:					
Quicklime	38,259[2]	8,202	3,793	68,824	29,479
Hydrated lime	14,215[2]	8,808	8,870	59,214	59,074
Total	52,474[2]	17,010	12,663	128,038	88,553
Construction:					
Quicklime	6,940	6,574	7,018	37,083	41,346
Hydrated lime	98,333[2]	103,838	88,442	490,388	447,842
Total	105,273[2]	110,412	95,460	527,471	489,188
Chemical and other industrial:					
Quicklime	675,958[2]	657,539	591,547	3,791,564	3,522,748
Hydrated lime	130,683[2]	118,872	143,820	719,638	839,238
Total	806,641[2]	776,411	735,367	4,511,202	4,361,986
Refractory (dead-burned dolomite)	170,825	168,693	144,901	841,399	1,182,637

[1]The monthly canvass excludes the output of plants producing less than 10,000 tons a year. [2]Revised figure.

Spec Sand for

Eagle Sand Section turns out quality product with no fuss for Traxler Materials Company

Traxler Materials Company, Utica, Mississippi, is furnishing specification aggregate for construction of the Keystone Dam on the Cimarron River near Keystone, Oklahoma . . . a soil conservation and water control project.

The specification fine aggregates are produced from natural river sands downstream from the dam site, together with blow sand from nearby deposits. Material is pumped from the river to a velocity killing pump box, and directed across a vibrating screen. A small percentage of coarse aggregate and trash is wasted from the top deck, and coarse sand is screened out and conveyed to the adjacent stockpile.

Material passing through the screen flows to the Eagle 32′ length water scalping-classifying tank. Additional fresh water is introduced through rising current classifiers over the first three coarse end valves, and water and silt overflow the long adjustable weirs as shown. The coarser sand particles from the feed end, together with lighter particles from the overflow end are fed to the following Eagle fine material washer-classifier-dehydrator through the adjustable gates on the splitters at each bleed valve. A high percentage of the middle size sand "belly" existing in this deposit is directed to waste. The dewatered product of the fine material washer is delivered to the nearby stockpile by the conveyor belt.

The properly classified river sands from the Eagle section are blended together with the coarse sand from the screen and with blow sands in order to meet the exacting specifications set up for this project by the Corps of Engineers, providing sand that will make good, sturdy concrete for a dam that will serve mankind for ages.

Eagle Equipment is economically processing sand for dams all over America—and for highways, schools and homes too—everybody benefits, the aggregate producer, the contractor, the public. Send for Catalog 61.

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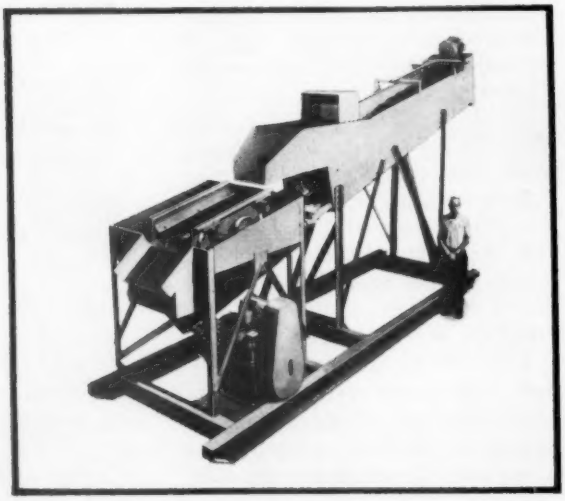
NEW Slurry Refuse Separator cleans contaminated gravel

Always in the lead with new and improved equipment that betters conditions for sand and gravel plants and quarries, Eagle introduces the Slurry Refuse Separator. An adaptation of the Coarse Material Washer-Dewaterer with Trash Remover Tub End, this machine recirculates silt and sand laden water to facilitate the flushing out of deleterious materials of light specific gravity. Units already in service are providing excellent performance. Single Screw (as shown) and Double Screw Units. Handles gravel up to 2½". If you are troubled with coal, sticks and similar light particles in your gravel, the Slurry Refuse Separator may solve your problem. A free test of your material in our lab will give you the answer.



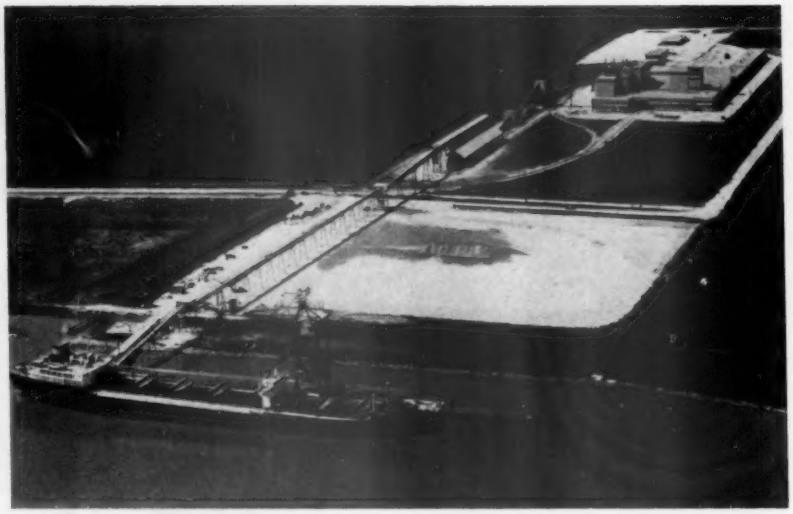
Keystone Dam!

Bestwall Gypsum Co. Opens $6,600,000 Plant On New Orleans Channel

Early in September, the $6,600,000 Bestwall Gypsum Company plant located on the New Orleans Tidewater Ship Channel, went into operation.

The plant's main structure contains a plaster mill and packaging center, a wallboard manufacturing department, and complete warehousing and shipping departments. Gypsum ore is transported from the unloading facility to the plant storage site by conveyors. Other facilities include a huge covered storage unit, crushing and screening phases, transfer towers, a laboratory, and office buildings.

This is the first plant built on the $101,000,000 channel, now under construction as a shorter, safer route than the 40-mile longer Mississippi River route currently used to reach the sea from the Port of New Orleans. Gypsum ore ships supplying the new Bestwall plant are presently using the navigable western end of the channel.



Bestwall Gypsum Company's new $6,600,000 plant, located on the New Orleans Tidewater Ship Channel.

National Gypsum Builds Docks, Prepares for Sales Upturn

New docks will be constructed at National Gypsum Company's Portsmouth, N. H., plant, which makes gypsum wallboard, lath, plaster, and other building materials. The plant is supplied with gypsum from the company's extensive Nova Scotia mining development by National's fleet of ore carriers.

Paper-making capacity of the Newburgh, N. Y., and Garwood, N. J., plants will also be substantially expanded. These plants manufacture paper liner for gypsum building products.

The announcements were made at a meeting of the company's district sales managers in Buffalo, N. Y., the corporate headquarters. Several weeks later, 18 other district sales managers attended a similar session. A sales upturn in construction is anticipated.

July Construction Awards Underscore Strength In Apartment Category

During July contracts for future construction held close to the high June level, due to a sharp increase in housing and continued strength in nonresidential building, according to F. W. Dodge Corporation.

Total contracts amounted to $3,528,553,000—down 2 percent from a year ago. After adjustment for normal seasonal patterns, July figures were down only 1 percent from June. The Dodge Index stood at 277, compared with 281 in June, 257 in May, and 285 a year ago.

Residential contracts were up 13 percent over July, 1960. The major source of strength in this category was a 59 percent increase in contracts for apartment buildings. Single-family homes also showed a modest improvement over last year, with the number of dwelling units represented by the contracts totalling 106,844—up 10 percent from 1960.

Nonresidential buildings showed gains in commercial buildings, schools, and hospitals, offsetting declines in contracts for manufacturing and other types of nonresidential structures.

Heavy engineering contracts were down 22 percent.

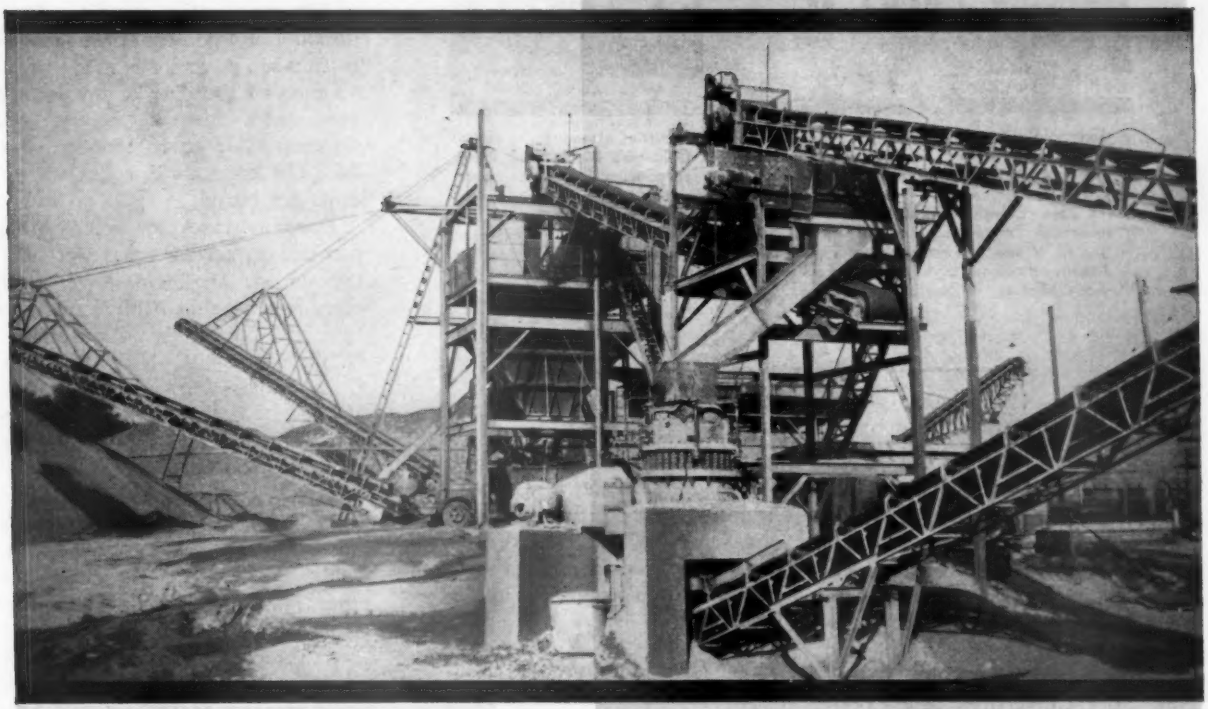
A summary of the latest figures is given in the table below:

	July, 1961	July, 1960	% Change
Nonresidential bldg.	$ 1,154,200,000	$ 1,151,980,000	—
Residential bldg	1,501,563,000	1,329,243,000	+13
Heavy engineering	872,790,000	1,115,686,000	—22
Total construction	$ 3,528,553,000	$ 3,596,909,000	— 2
	7 Mo. 1961	**7 Mo. 1960**	**% Change**
Nonresidential bldg.	$ 7,135,455,000	$ 6,940,239,000	+ 3
Residential bldg.	9,259,636,000	8,922,251,000	+ 4
Heavy engineering	5,335,298,000	5,285,557,000	+ 1
Total construction	$21,730,389,000	$21,148,047,000	+ 3

Chicago's Conrad Hilton Hotel will be the headquarters for the annual convention and machinery exposition of the National Crushed Stone Association, to be held February 12 to 14, 1962.

The 91st annual meeting of the American Institute of Mining, Metallurgical and Petroleum Engineers, Inc., is to be held at the Statler Hotel in New York, February 18 to 22, 1962.

HOLLY MANUFACTURING AND MINING COMPANY processes 300-400 tons of gravel per hour with 5 SIMPLICITY screens!



Write for information on Simplicity equipment today.

At the Holly Manufacturing and Mining Company, Holly, Michigan, pit run gravel is brought from the pit to a surge pile on belt conveyors. From the surge pile, a belt conveyor takes the gravel to a Simplicity 5′ x 14′ Model "D" 2-deck screen. At this point, all oversize material, including rocks up to 8 inches in diameter, is run through a cone crusher and then re-circulated to the screen. A belt then takes all through material to two Simplicity M-11 4′ x 12′ 3-deck screens where the gravel is washed, sized, then stockpiled to be used as needed. The other 2 Simplicity screens are used for processing special products.

All 5 Simplicity screens have been in operation for over two years, part of the time on a two-shift schedule, with a minimum of down time.

Gravel plant operators are getting quick, economical and dependable processing of their material with Simplicity Screens, Feeders and Conveyors.

SALES REPRESENTATIVES IN ALL PARTS OF THE U.S.A.
FOR CANADA: Simplicity Materials Handling Limited, Guelph, Ontario.
FOR EXPORT: Brown & Sites, 50 Church Street, New York 7, N. Y.

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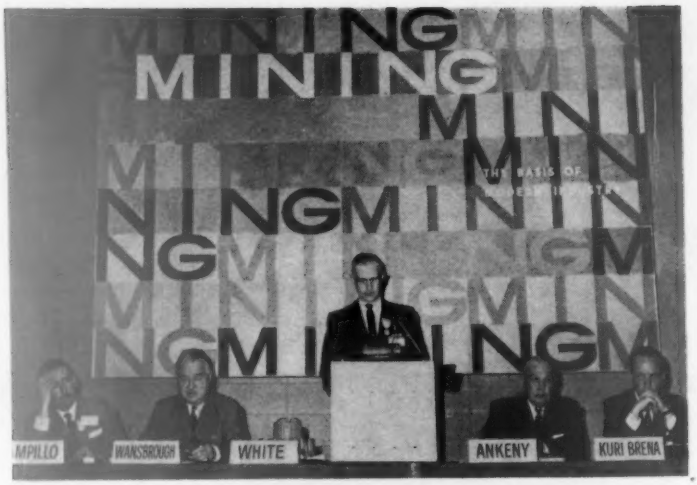


• Sixty-four mining industry representatives from six countries attended the recent Inter-American Mining Seminar which was held in Chicago's McCormick Place. It was sponsored by International Minerals & Chemical Corporation in co-operation with the Chicago International Trade Fair. Principal speakers (left to right) were: Jose Campillo, president of the Mining Federation of Mexico; V. C. Wansbrough, managing director of the Canadian Metal Mining Association; Nelson C. White, chairman of the seminar and vice-president of I.M.C.; Marling J. Ankeny, director, U. S. Bureau of Mines; and Daniel Kuri Brena, representing Mexico's Minister of National Patrimony.

A. A. Bates Named Director Of University Valley—N. Y. U. Research Facility

Dr. A. Allan Bates, formerly vice-president for research and development at the Portland Cement Association, Skokie, Ill., has been named the director of University Valley, New York University's new 1,000-acre research and educational center in Sterling Forest, N. Y.

Plans to create University Valley, which will be surrounded by a number of industrial research laboratories, were announced last December by New York University and the Sterling Forest Corporation. Sterling Forest, now being developed as a research and residential community, consists of 30 square miles of property near Tuxedo, N. Y.

Dr. Bates has been associated with the Portland Cement Association since 1946. During this period he organized and administered laboratories devoted to research and development on all aspects of cements and concretes and their uses. These laboratories, near Chicago, are the largest in this field.

From 1938 to 1946 Dr. Bates was manager of chemical, metallurgical, and ceramic research at the Westinghouse Electric Corporation in Pittsburgh. During the previous ten years he was a professor of metallurgical engineering at the Case Institute of Technology in Cleveland.

Dr. A. Allan Bates

Discount Tradition Broken By New Alpha Policy—Prices Hiked at 6 Plants

Long-standing cement industry discount policies have been discarded by a major producer, Alpha Portland Cement Company. Management recently announced new discounts and prices to be effective January 1, 1962. (Alpha's previous discount policy had been in effect for more than 45 years.)

The new policy provides for a discount of 4 percent of the invoiced price when payment is made within 15 days of the date of invoice. In most cases this will amount to a discount of 15 to 18 cents per barrel. The previous discount was 10 cents per barrel.

Price increases for some Alpha products in certain areas were also announced. The increase will be 10 cents per barrel at Alpha's plants in Martin's Creek, Pa.; Cementon, N. Y.; Jamesville, N. Y.; Ironton, O.; St. Louis, Mo.; and Lime Kiln, Md. At two other plants—Birmingham, Ala., and LaSalle, Ill.—the increase will be 15 cents.

Masonry cement prices will remain the same at the company's plants at Birmingham, LaSalle, St. Louis, and Ironton, but at the four other plants the price will be increased 10 cents per barrel.

Management of Ideal Cement Company stated that an across-the-board increase of 15 cents per bbl. (about 4.3 percent to 4.6 percent) in the mill price will be in effect next year. No change will be made in Ideal's discount policy of 10 cents per bbl. for payments made within 15 days.

Other major cement producers are considering price revisions, but announcements of specific decisions have not been made.

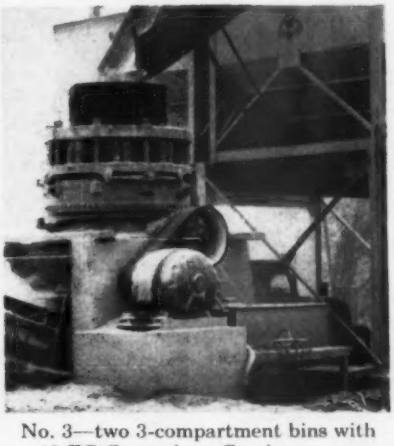
Approximately 600 employees of the New York Trap Rock Company, West Nyack, N. Y., returned to their jobs on August 28 at the firm's plants. All but one of the company's operations were closed during the strike of ready-mix truck drivers, which halted work on about $600 million worth of construction in the New York Metropolitan area.

MEETS ALL SPECS ...IN A SINGLE PLANT

● Processing hard trap rock, this plant makes all Delaware and Maryland Highway specification sizes, as well as producing all required sizes for general construction. Plant has a cleancut straight line layout and is Telsmith equipped. As designed, the plant has unusual flexibility—a large primary surge pile; 4 stages of crushing; 3 stages of bins and screening: for modified sizes . . . for large sizes . . . and a dual tertiary stage for fine sizes. Designed for a maximum capacity of 2500 tons daily, the plant, near North East, Md., is owned by Maryland Materials, Inc., formed by Petrillo Bros., well known aggregate producers, and James Julian, Inc., prominent contractors of Wilmington, Del.

No. 1 bin with 5′ x 12′ double deck Scalper and 13-B Gyratory Crusher

No. 2 bin with 5′ x 14′ triple deck Vibro-King Screen, 48-S Gyrasphere Crusher



No. 3—two 3-compartment bins with a 48-FC Gyrasphere Crusher

TELSMITH Equipment in this plant—48″ x 16′ heavy duty Apron Feeder • 36″ x 6′ heavy duty Plate Feeder • 5′ x 12′ double deck Scalper • 13-B Gyratory Crusher • 5′ x 14′ triple deck Vibro-King Screen • 48-S Gyrasphere Crusher • two 4′ x 14′ triple deck Vibro-King Screens • 48-FC Gyrasphere Crusher • two 36″ x 72′, 36″ x 132′, 30″ x 130′, 24″ x 126′, 24″ x 74′ Telsmith Barber-Greene conveyors.

Send for Bulletin 266

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No. 2 in a series of announcements on new **HOUGH** *machines*

This all-new 1¾ cu. yd. PAYLOADER

is far ahead

of any machine in its price class . . . in capacity, power, design and performance

The Frank G. Hough Co. has been engaged in a continuous program of research, development and improvement of exising models ever since it pioneered the first four-wheel-drive tractor-shovel. This program led to the new concept and design of the H-30 and H-120 PAYLOADER units which gained tremendous acceptance during the past two years and has helped to maintain PAYLOADER leadership.

The H-60 represents even further progress and development. It is a completely new machine in size and capacity with these special points of interest . . .

High Lift and Long Reach: Note the ease with which the operator deposits a full load in the hopper. Faster, more productive cycles are the result.

Safety and Convenience: All bucket and boom mechanisms are located ahead of the operator compartment for maximum protection. The steeply-sloped cowl and open design give 100% visibility. The comfortable, adjustable bucket seat and conveniently located controls make operation easy. The walk-in operator's compartment is easily accessible with safety ladder and hand rails.

Less Maintenance: Only PAYLOADER units like the new H-60 have a simplified boom mechanism with a single bucket tilt cylinder. This means you have from 4 to 10 fewer pivot and grease points and fewer parts to service and maintain. Furthermore, all pivot points on steering, boom and bucket mechanisms are fitted with "O" rings and other seals which keep grease in and dirt out to provide longer life and less maintenance. The hydraulic steering system uses two direct-acting rams with fewer pivot points.

"Keep-clean" Hydraulic System: A valuable, exclusive HOUGH feature is the closed and pressure-controlled hydraulic system to keep out air-borne dust and moisture. The new cylindrical, vessel-type reservoir has extra strength and the entire top is easily removed for thorough maintenance and easy servicing. There is a complete full-flow micronic filtering system.

"No stop" Full Power-shift Transmission: This HOUGH transmission was developed exclusively for rubber-tired tractor-shovel requirements and has been thoroughly proven on thousands of PAYLOADER units. All shifts, up or down, forward or reverse, can be made "on-the-go" with no stopping and engagement of gears needed for "range-shifts."

Sealed, 4-wheel Power Brakes: These powerful brakes are air-controlled with only touch-toe effort and are sealed against dust and dirt. Furthermore, the exclusive HOUGH axle design makes it possible to service and re-line the brakes without removing and exposing planetary hubs to dust and dirt. Another important HOUGH-pioneered feature is the "Operator's choice" dual brake pedals which permit braking with or without transmission engaged.

Positive Oil Cooling: Separate fan-cooled oil-to-air radiator assures positive cooling of both transmission and torque converter oil. Another exclusive HOUGH protective feature.

"Power-transfer" Differentials: Both axles are equipped with torque-porportioning differentials. When one wheel has better traction than the other on the same axle, it can automatically receive up to 38% more torque. This assures the best possible traction at all times.

The new H-60 model is offered with a choice of gasoline or diesel power and with buckets from 1⅛ to 3½ cubic yard capacities. (S.A.E. rated) For additional information and specifications, see your HOUGH Distributor or use the attached coupon.

THE FRANK G. HOUGH CO. 10-B-1
750 Sunnyside Ave., Libertyville, Ill.

Send full data on all-new Model H-60 "PAYLOADER"

Name _____
Title _____
Company _____
Street _____
City _____ State _____

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY - INTERNATIONAL HARVESTER COMPANY

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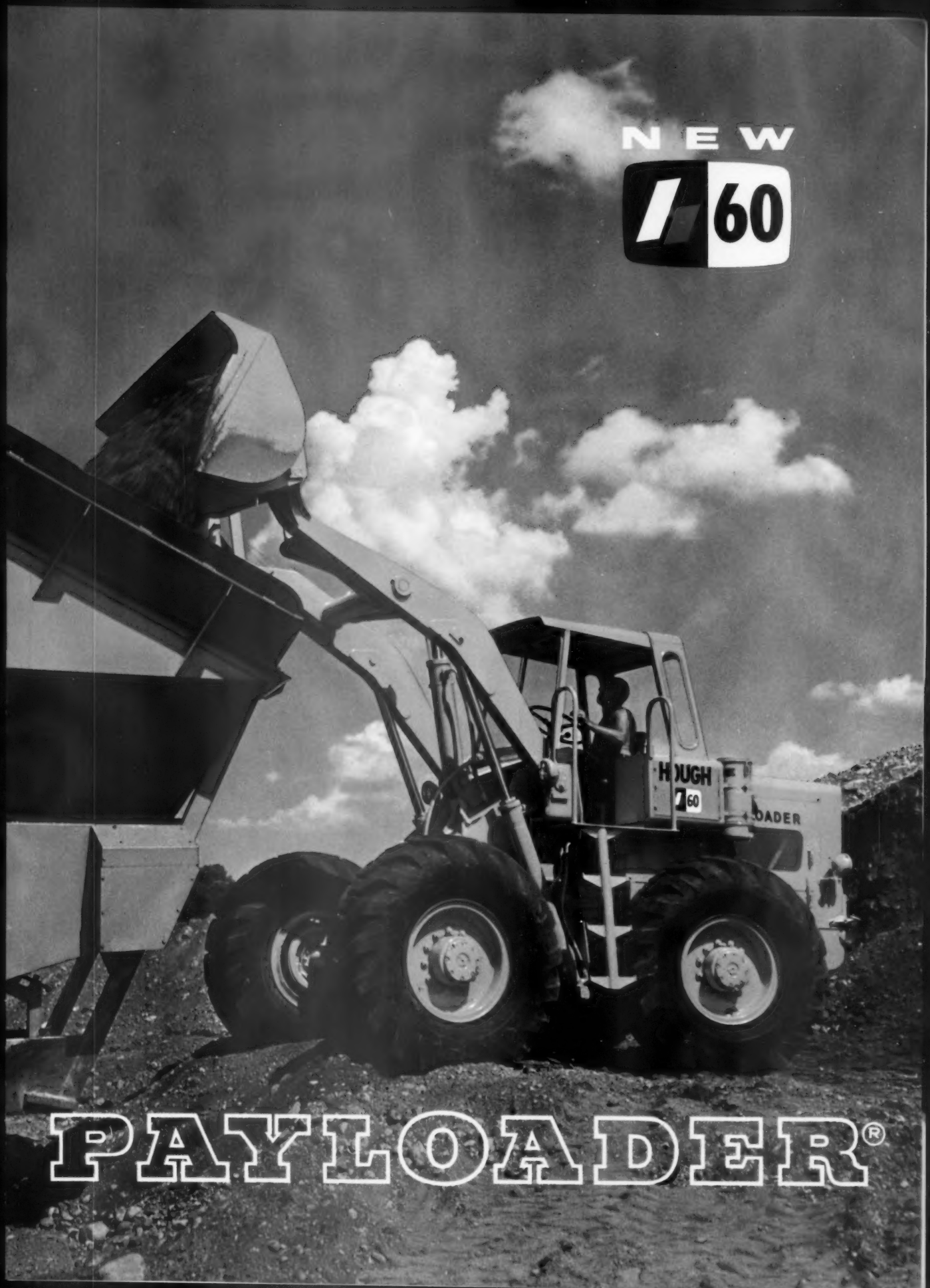
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NEW

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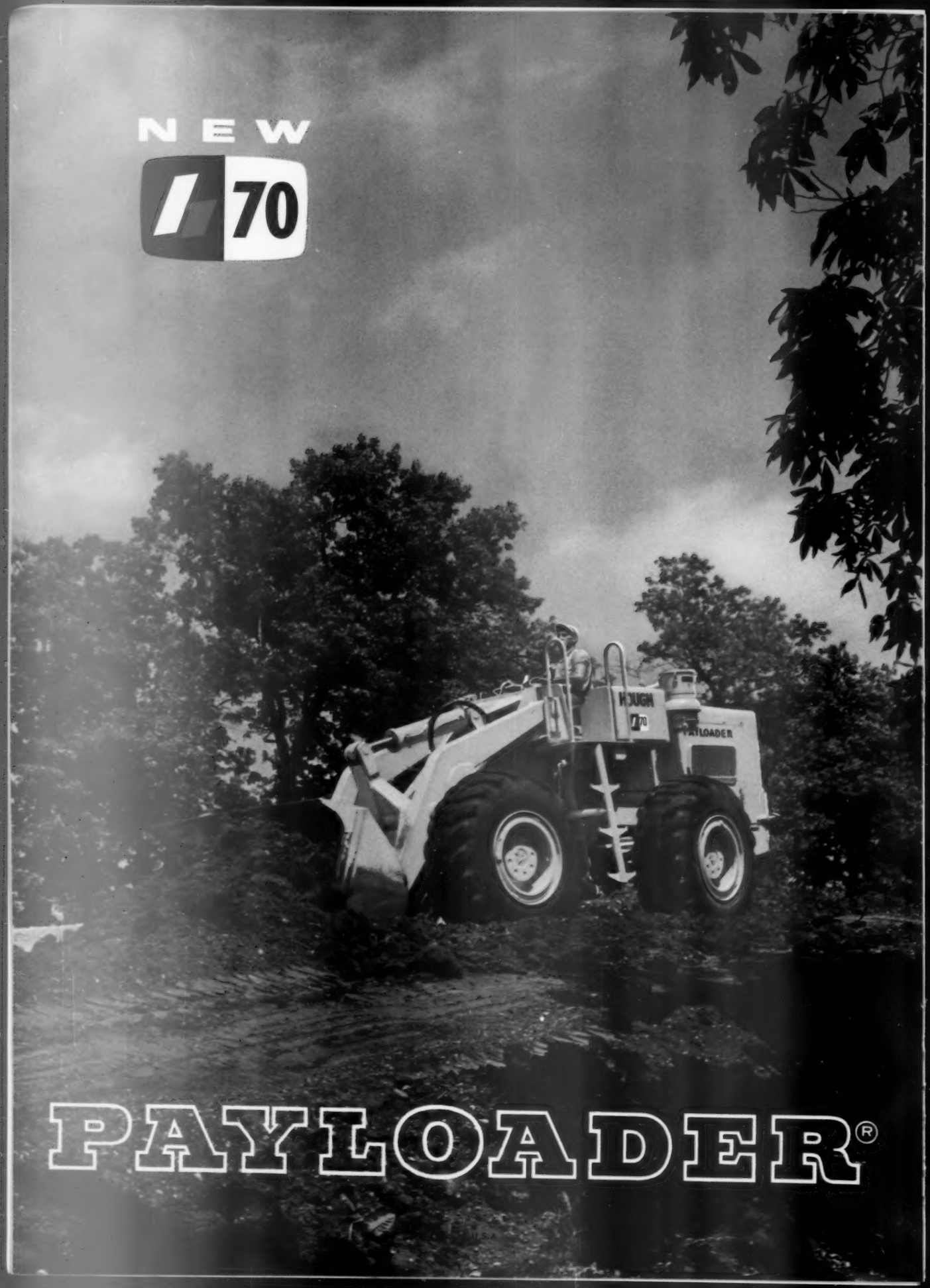

PAYLOADER®

No. 3 in a series of announcements on new HOUGH *machines*

The new 2½ cu. yd. PAYLOADER

has everything

according to the aggregate producers and contractors who tested this unit

The advanced design and exclusive features of this new H-70 series "C" model were subjected to many months of continuous, rugged testing by users on actual job-site locations before final evaluation.

Those items which contributed the most to the unmatched performance of the smaller H-30 and larger H-120 four-wheel-drive PAYLOADER models during the past two years served as a guide for the development of this completely new 2½ cubic yard tractor-shovel.

By comparison with the previous model, the H-70C has increased capacity, more power, greater flotation, additional reach, easier handling, simplified maintenance, new safety features and vastly superior performance. Some of the features are:

More Capacity: An increase of 25% in the size of the standard bucket, from 2 to 2½ cubic yards. (S.A.E. rated) Optional buckets from 1⅜ to 5 cu. yds. are available.

More Power: The new heavy-duty diesel engine delivers 148 hp which is an increase of 20% over the previous model. This gives the H-70C more horsepower per pound of machine weight than any comparable machine.

Safety and Convenience: All bucket and boom mechanisms are located ahead of the operator compartment for maximum protection. The steeply-sloped cowl and open design give 100% visibility. A comfortable, adjustable bucket seat and conveniently located controls make operation easy. Safety ladder and hand rails provide easy access to the walk-in driver compartment.

Less Maintenance: The only loader in its class with simplified PAYLOADER boom mechanism and single bucket tilt cylinder. This means you have from 4 to 10 fewer pivot and grease points and fewer parts to service and maintain. In addition, all pivot points on steering, boom and bucket mechanisms are fitted with "O" rings and other seals which keep grease in and dirt out to provide longer life and less maintenance.

"Keep-clean" Hydraulic System: A valuable, exclusive HOUGH feature is the closed and pressure-controlled hydraulic system to keep out air-borne dust and moisture. The new cylindrical, vessel-type reservoir has extra strength and the entire top is easily removed for thorough maintenance and easy servicing. There is a complete full-flow micronic filtering system.

"No-stop" Full Power-shift Transmission: This HOUGH transmission was developed exclusively for rubber-tired tractor-shovel requirements and has been thoroughly proven on thousands of PAYLOADER units. All shifts, up or down, forward or reverse, can be made "on-the-go" with no stops for any "range-shift" engaging of gears.

The H-70 series "C" has many other proven HOUGH features including a separate fan-cooled, oil-to-air radiator for effective cooling of both torque-converter and transmission oil; torque-proportioning differentials for better traction; "operator's choice" dual brake pedals which permit braking with or without transmission engaged. For complete information on the tractor-shovel that "has everything" see your HOUGH distributor or use the coupon.

THE FRANK G. HOUGH CO.
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Send complete data on H-70C PAYLOADER

Name _____

Title _____

Company _____

Street _____

City _____ State _____

1960 U. S. Lime Output 4 Percent Above 1959—Breaking Former Records

During 1960, 4 percent more lime was produced in the United States than in 1959, the previous record year. These figures are based on reports made by producers to the U. S. Bureau of Mines.

Total output of open-market and captive lime was 13,000,000 short tons. Open-market lime decreased 3 percent, and captive lime increased 16 percent. Open-market lime constituted 63 percent of the national total, and captive lime accounted for the remaining 37 percent.

Chemical and industrial lime increased 6 percent, but other major use categories declined: agricultural lime, down 4 percent; construction lime, down 6 percent; and refractory lime (or dead-burned dolomite), down 2 percent.

Seventy-four percent of all lime produced was used by chemical and industrial plants, 15 percent as refractory material, 10 percent in construction, and only 1 percent in agriculture. Quicklime comprised 64 percent, hydrated lime 21 percent, and dead-burned dolomite 15 percent of the total lime production.

The number of active open-market and captive lime producers reporting to the Bureau rose to 158 from 156 in 1959. Lime production was reported in 33 states and in Puerto Rico. Ohio, Missouri, and Michigan, in that order, were the three leading states, accounting for 43 percent of all U. S. lime.

Average annual plant production totaled 82,000 short tons. During late 1960, many plants operated at full capacity; but others, serving the steel industry, operated at only 50 percent capacity.

Average national price for all open-market and captive quicklime and hydrated lime combined, f.o.b. plant, excluding the cost of the container, was $13.35 per ton, an increase of 2 percent over the average 1959 price. However, an industry source reported unchanging lime prices per ton in 25-ton-or-over lots.

Technical, Scientific Material Covered in *Engineering Index*

The Engineering Index annotates and indexes selectively on the basis of engineering significance, the available current technical periodicals received by, and permanently housed in, the Engineering Societies Library in New York, N. Y. The 1960 issue is now available.

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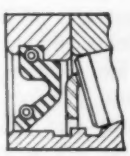

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L. to r.: Rep. J. H. Dent (D. Pa.), chairman, House Subcommittee on the Impact of Imports and Exports on American Employment; Donald Hiss, counsel for 12 cement producers; Vincent Speciale, general representative, United Cement, Lime and Gypsum Workers International Union; Stanley H. MacArthur, vice-president, Glens Falls Portland Cement Co.; and Rep. C. M. Bailey (D., W. Va.), senior member of the subcommittee.

Amend Antidumping Act, Management, Union Urge At Cement Import Hearing

"Over 600,000 man-hours, resulting in nearly $2,000,000 in wages and fringe benefits, were lost to U. S. workers in northeastern cement plants during 1959 and 1960 as a result of dumped imports of cement," declared a labor union official in testimony prepared for delivery Tuesday, August 29, 1961, at the open hearing on the cement industry held by the House Subcommittee on the Impact of Imports and Exports on American Employment.

Victor H. Thomas, seventh general vice-president, United Cement, Lime and Gypsum Workers International Union, also cited significant indirect consequences of cement dumping and the frequent long delays of the Treasury Department in ordering special dumping duties. He called upon the Subcommittee and the Congress to set time limits within which Treasury must make determinations entrusted to it under the Antidumping Act, and urged that several amendments to the Act be made.

Stanley H. MacArthur, vice-president, Glens Falls Portland Cement Company, Glens Falls, N. Y., appeared as the industry representative of 12 domestic cement producers that have felt the serious impact in recent years of the large quantities of cement imported from 11 foreign countries and sold in the United States at prices lower than those in the exporters' home markets. Mr. MacArthur pointed out that at his mill in 1959 and 1960 dumped foreign cement resulted in the loss of tens of thousands of man-hours of labor and the equivalent of almost $100,000 in lost wages and fringe benefits. In each year, he added, the loss of profits to his firm from this unfair trade practice totaled several hundred thousand dollars. He stressed the need for amending the Antidumping Act to assure speedier determinations and expressed full support of the labor official's three-point proposal for amending the Antidumping Act.

Donald Hiss, counsel for the 12 domestic cement producers directly concerned with the cement dumping in East Coast markets, presented a specific amendment to Sections 201 and 202 of the Antidumping Act of 1921 as amended, which incorporated the recommendations advanced by Mr. Thomas and endorsed by Mr. MacArthur.

The open hearing on the cement industry is a part of a study carried on by the House Subcommittee into the impact of imports and exports upon American employment.

Statistical Abstract of U.S. In 82nd Edition Now Available

The 82nd annual edition of the *Statistical Abstract of the United States,* published in 1961, is now available. It is published by the U. S. Department of Commerce and contains almost 1,000 pages of statistical information about production, product value, employees, etc., for most of the industries now operating in the United States. Because it is so comprehensive in its coverage, it is a handy, ready-reference for any person who finds it necessary to refer to statistics from time to time.

Of particular interest to persons in the pit and quarry industries are the sections on Mining and Mineral Products and the one on Construction and Housing. The Mining and Mineral Products section gives the quantity and value of mineral production, prices, supply, imports and exports, employment, injuries, strategic and critical minerals, and stone and earth mineral statistics.

The Construction and Housing section shows the value of private and public construction, wholesale price indexes of building materials, construction and building costs, construction contracts, public works expenditures, dwelling units, starts, inventory, costs, characteristics, facilities, occupancy, and rents. In addition to the sections on Mining and Mineral Products and Construction and Housing, the new *Statistical Abstract of the U. S.* contains 32 other sections, including population, education, law enforcement, recreation, labor force; military services; income and expenditures, elections, federal, state, and local finances, business enterprise, power and scientific development, waterways and shipping, agriculture, fisheries, foreign commerce and aid.

The Statistical Abstract may be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., or from a local Department of Commerce office, at $3.50 a copy.

A five-year test made by the Oklahoma Highway Commission (from January 1, 1956, through December 31, 1960) on a four-mile stretch of U. S. Highway 77, which was built on a checkerboard pattern with both portland cement and asphalt concrete in alternating sections, showed that while cement sections were still in good condition, the asphalt sections needed resurfacing.

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Winning Operations Announced in

1960 N.C.S.A.-Mines Bureau Safety Contest

THE thirty-fifth consecutive National Crushed Stone Association Safety Contest, conducted annually by the Federal Bureau of Mines, Department of the Interior, and sponsored by the National Crushed Stone Association, closed with five outstanding accomplishments to its credit: (1) a record number of participants (66) completing the competitive year without a disabling work injury; (2) the highest number of mines and quarries (152) participating; (3) more man-hours of operation (12,306,460) than in any other year of the competition; (4) the third-lowest injury-frequency rate (16.820) in the history of the contest; and (5) fewer disabling work injuries (207) than in the previous year.

The objective of the annual contest is to stimulate safety consciousness among employees and officials of crushed stone producers of the United States.

The Bureau of Mines, in co-operation with the National Crushed Stone Association inaugurated the contest in 1926. Such competition has been strongly influential in curbing injuries among crushed stone operators.

The same rules and the same reports are used in both the National Safety Competition and the National Crushed Stone Association Safety Contest. There are two additional qualifications for the crushed stone contest: the company must be a member of N.C.S.A., and must produce crushed stone for commercial use.

Eligible participants are placed in the following groups: Group I, those working 200,001 man-hours or more; Group II, 100,001 to 200,000; Group III, 50,001 to 100,000; Group IV, 30,001 to 50,000; and Group V, 30,000 or less. The participant with the greatest number of injury-free man-hours in each group is the group winner and receives a bar for attachment to a plaque provided by N.C.S.A. In addition to the bars for the five group winners, each employee and official of the winning operation receives a safety certificate from the association. This certificate is inscribed with the employee's name, the quarry or mine name and location, and the name of the company.

The plant with the longest period of operating time receives the Explosives Engineer Award, a bronze plaque provided by the *Explosives Engineer* magazine, which shows in bas-relief the quarrying scene on the pedestal of the "Sentinels of Safety" trophy which is awarded in the National Safety Competition.

Sixty-six operations—58 quarries and 8 underground nonmetal mines—achieved perfect safety records during the 1960 competitive year. However, because one operation did not file all statistical reports required of participants of the National Safety Competition, it was declared ineligible. Consequently, only 65 received N.C.S.A. awards. The 66 injury-free operations worked 3,503,473 man-hours, representing 28 percent of the total work time of all participants enrolled in the contest. The award-winning, injury-free operations working through 1960 are classified according to the various association award-groups as follows:

Group I—Plants Working 200,001 Man-Hours or More

There were no injury-free operations in this group.

Group II—Plants Working 100,001 to 200,000 Man-Hours

GROUP WINNER—Bessemer quarry, Bessemer, Pa., The Bessemer Limestone & Cement Co., 199,581 man-hours

Mississippi mine, Ste. Genevieve, Mo., Mississippi Lime Co., 195,043 man-hours

Lowell quarry, Lowell, Vt., The Ruberoid Co., 171,397 man-hours

Kings Mountain quarry, Kings Mountain, N. C., Superior Stone Co. Div., American-Marietta Co., 156,911 man-hours

Kingston No. 3 quarry, Kingston, N. Y., The Callanan Road Improvement Co., 155,508 man-hours

Blue Ridge quarry, Roanoke, Va., Blue Ridge Stone Corp., 115,550 man-hours

Pixley mine, Independence, Mo., Stewart Sand & Material Co., 108,203 man-hours

Peerless mine, Ste. Genevieve, Mo., Mississippi Lime Co., 107,847 man-hours

Chattanooga quarry, Chattanooga, Tenn., Chattanooga Rock Products Div., Vulcan Materials Co., 100,566 man-hours

Group III—Plants Working 50,001 to 100,000 Man-hours

GROUP WINNER—Neverson quarry, Bailey, N. C., Superior Stone Co. Div., American-Marietta Co., 92,625 man-hours

Alden quarry, Alden, Iowa, Weaver Construction Co., 85,894 man-hours

Charlotte quarry, Charlotte, N. C., Superior Stone Co. Div., American-Marietta Co., 82,265 man-hours

Cape Girardeau quarry, Cape Girardeau, Mo., The Federal Materials Co., 69,346 man-hours

McLeansville quarry, McLeansville, N. C., Superior Stone Co. Div., American-Marietta Co., 65,044 man-hours

Findlay quarry, Findlay, Ohio, National Lime & Stone Co., 63,025 man-hours

Stokesdale quarry, Stokesdale, N. C., W. E. Graham & Sons Div., Vulcan Materials Co., 60,928 man-hours

Watertown quarry, Watertown, N. Y., The General Crushed Stone Co., 60,561 man-hours

Rock Cut Quarry, Jamesville, N. Y., The General Crushed Stone Co., 60,398 man-hours

Middletown quarry, Middletown, Va., M. J. Grove Lime Co., 59,380 man-hours

South Fork quarry, Winston-Salem, N. C., W. E. Graham & Sons Div., Vulcan Materials Co., 58,549 man-hours

Kimballton mine, Kimballton, Va., The Standard Lime & Cement Co. Div., American-Marietta Co., 58,141 man-hours

Buchanan quarry, Greensboro, N. C., Superior Stone Co. Div., American-Marietta Co., 56,681 man-hours

Red Hill quarry, North Garden, Va., Superior Stone Co. Div., American-Marietta Co., 56,458 man-hours

Pomona quarry, Guilford, N. C., Superior Stone Co. Div., American-Marietta Co., 55,987 man-hours

Prospect Stone No. 6 quarry, Prospect, N. Y., Eastern Rock Products Co., Inc., 52,968 man-hours

Verdon quarry, Doswell, Va., The Gen-

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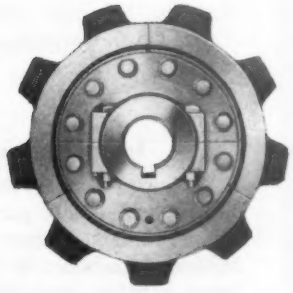

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Hi-Speed Backstop (HSB) series for exterior mounting on gear reducers in less stringent installations have bore diameters from .500″ to 2.750″ in torque capacities from 140 lbs. ft. to 1900 lbs. ft.

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eral Crushed Stone Co., 52,923 man-hours
Shelton quarry, Shelton, N. C., W. E. Graham & Sons Div., Vulcan Materials Co., 51,626 man-hours

Group IV—Plants Working 30,001 to to 50,000 Man-Hours

GROUP WINNER—Bakers quarry, Monroe, N. C., Superior Stone Co. Div., American-Marietta Co., 46,380 man-hours
Buggs Island quarry, Boydton, Va., W. E. Graham & Sons Div., Vulcan Materials Co., 44,206 man-hours
Stafford quarry, Stafford, N. Y., Genesee Stone Products Corp., 44,148 man-hours
Belgrade quarry, Maysville, N. C., Superior Stone Co. Div., American-Marietta Co., 42,442 man-hours
Semco quarry, Osgood, Ind., South Eastern Materials Corp., 39,420 man-hours
Danville quarry, Danville, Va., Superior Stone Co. Div., American-Marietta Co., 38,742 man-hours
Elm City quarry, Elm City, N. C., Superior Stone Co. Div., American-Marietta Co., 38,175 man-hours
Buckland quarry, Buckland, Ohio, The National Lime & Stone Co., 38,000 man-hours
Hickory quarry, Hickory, N. C., Superior Stone Co. Div., American-Marietta Co., 37,288 man-hours
Rolesville quarry, Wake Forest, N. C., Superior Stone Co. Div., American-Marietta Co., 36,630 man-hours
Ashland quarry, Ashland, Mass., Bayer & Mingolla Construction Co., Inc., 34,375 man-hours
Mt. Airy quarry, Mt. Airy, N. C., W. E. Graham & Sons Div., Vulcan Materials Co., 31,475 man-hours
Wallingford No. 1 quarry, Wallingford, Conn., The New Haven Trap Rock Co., 31,057 man-hours
Caledonia mine, Caledonia, N. Y., The Ruberoid Co., 30,748 man-hours.

Group V—Plants Working 30,000 or Less Man-Hours

GROUP WINNER—Linwood mine, Davenport, Iowa, Linwood Stone Products Co., 29,654 man-hours
Pineville quarry, Pineville, N. C., Superior Stone Co. Div., American-Marietta Co., 28,711 man-hours
Big Horn quarry, Warren, Mont., Weaver Construction Co., 28,328 man-hours
Reidsville quarry, Reidsville, N. C., Superior Stone Co. Div., American-Marietta Co., 28,166 man-hours
LeRoy quarry, LeRoy, N. Y., The General Crushed Stone Co., 27,915 man-hours
Cape Girardeau mine, Cape Girardeau, Mo., The Federal Materials Co., Inc., 26,827 man-hours
Irvington quarry, Irvington, Ky., The Kentucky Stone Co., 25,896 man-hours
Rochester quarry, Honeoye Falls, N. Y., The General Crushed Stone Co., 24,270 man-hours
Rock Hill quarry, Quakertown, Pa., The General Crushed Stone Co., 23,449 man-hours
Gaston quarry, Dallas, N. C., Superior Stone Co. Div., American-Marietta Co., 22,963 man-hours
No. 11 quarry, Lick Creek, Ill., Columbia Quarry Co., 20,757 man-hours
White Haven quarry, White Haven, Pa., The General Crushed Stone Co., 19,947 man-hours
Cairo quarry, Cairo, N. Y., Catskill Mountain Stone Corp., 19,807 man-hours
Lowden quarry, Lowden, Iowa, Weaver Construction Co., 19,697 man-hours
Hudson quarry, Hudson, N. Y., Catskill Mountain Stone Corp., 18,500 man-hours
Somerset quarry, Somerset, Ky., Somerset Stone Co., Inc., 17,736 man-hours
No. 10 quarry, Mermet, Ill., Columbia Quarry Co., 15,684 man-hours
Farmer quarry, Denton, N. C., Superior Stone Co. Div., American-Marietta Co., 15,414 man-hours
Upton quarry, Upton, Ky., The Kentucky Stone Co., 14,635 man-hours
Plainville No. 4 quarry, Plainville, Conn., The New Haven Trap Rock Co., 13,845 man-hours
Todd quarry, Elkton, Ky., The Kentucky Stone Co., 12,050 man-hours
Plant No. 4 quarry, Knippa, Tex., Southwest Stone Co., 10,193 man-hours
Morgantown quarry, Morgantown, Pa., Bradford Hills Quarry, Inc., 9,227 man-hours
No. 7 mine, Elsberry, Mo., Columbia Quarry Co., 8,683 man-hours

Twenty-four states were represented in the 1960 national contest. They were: North Carolina, 30; New York, 23; Kentucky and Ohio, 12 each; Virginia, 11; Illinois and Pennsylvania, 9 each; Missouri and New Jersey, 7 each; Georgia and Iowa, 4 each; Connecticut, Maryland, South Carolina, Texas, and Wisconsin, 3 each; Michigan, 2; and single operations in Indiana, Massachusetts, Montana, Oklahoma, South Dakota, Tennessee, and Vermont. Sixteen states were represented by injury-free operations. They were: Connecticut, Illinois, Indiana, Iowa, Kentucky, Massachusetts, Missouri, Montana, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Texas, Vermont, and Virginia.

Injury Experience

The over-all injury-frequency rate of the 152 plants participating in the 1960 contest was 16.820 per million man-hours of exposure, 9 percent below that of 18.515 recorded in 1959. This was the third-lowest frequency rate in the 35 years of the contest.

The severity rate of 4,434.744 days lost per million man-hours of operation was 29 percent higher than that of 3,436.614 recorded in 1959; however, the 1960 severity rate was below the 35-year average rate of 4,834.803 for the contest.

Of the 152 participants in 1960, quarries totaled 132 and underground nonmetal mines, 20. The 132 quarries had 182 injuries, 5

fatal, 10 permanent partial, and 167 temporary total. The injury-severity rate of 4,307.608 for these injuries was 44 percent higher than the corresponding rate of 2,991.462 for 1959, but was 7 percent lower than the average rate of 4,652.819 for the 35-year record.

In the underground nonmetal mines enrolled in 1960, there were 1 fatal and 24 temporary total injuries. The injury-severity rate fell from 7,906.156 in 1959 to 5,627.-198 in 1960; this was also a decline from the 35-year average rate of 6,327.269.

Causes of Injuries

Principal causes of injuries among the 1960 participating crushed stone operations were: haulage accidents, resulting in 35 injuries or 17.4 percent of all injuries for which the cause of injury was stated; falls of persons, resulting in 15.9 percent; handling materials, 12.9 percent; machinery, 9 percent; flying objects, 8 percent; and falling objects, 7.5 percent. All other causes accounted for the remaining 29.3 percent. The most severe injuries during the 1960 contest, as measured by total days of disability, resulted from haulage, falls of persons, falls and slides of rock, machinery, flying objects, and hand tools. These six causes accounted for 97 percent of the total days of disability.

Determination of Winners

This is the first year that the National Crushed Stone Association has changed its method of determining winners. It was decided to combine frequency and severity into a single measure of experience and use what is termed a "disabling injury index." Therefore, in future contests, participants will be rated according to disabling injury index; that is, according to the disabling injury frequency rate multiplied by the disabling injury severity rate and divided by 1,000.

If two or more participants have injury-free records, they are ranked in descending order of man-hours.

Applications for enrollment and rules governing the contest may be obtained from the Branch of Accident Analysis, Bureau of Mines, U. S. Department of the Interior, Washington 25, D. C.

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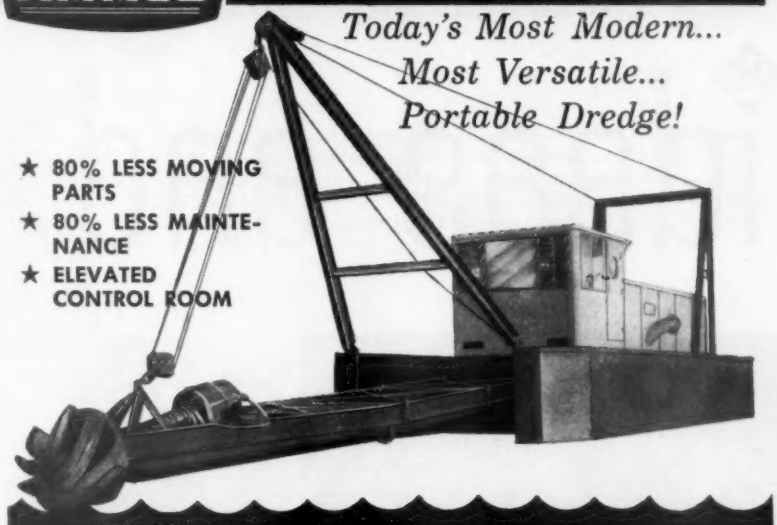

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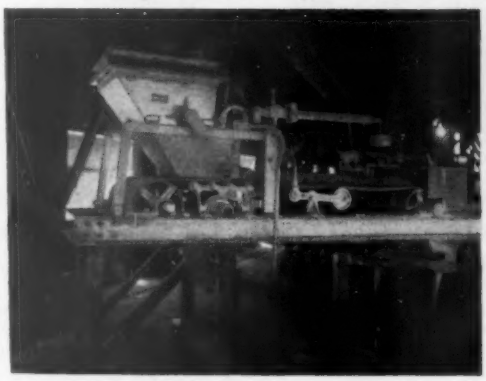

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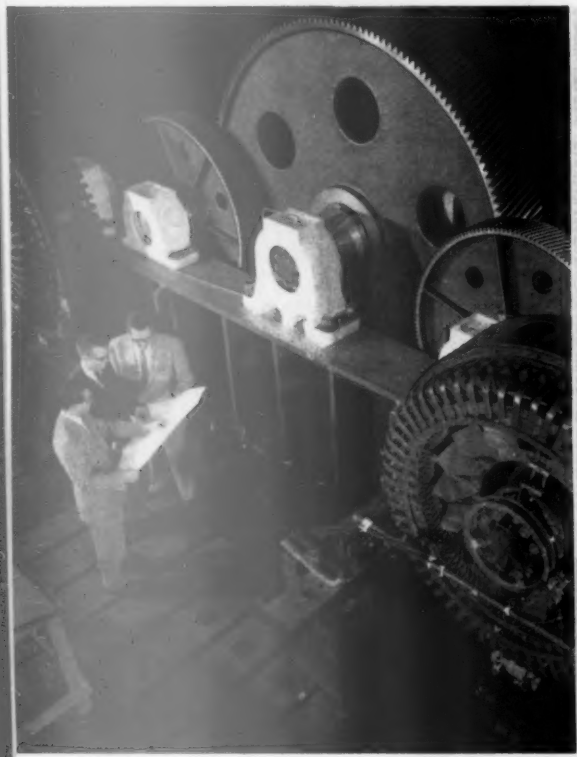
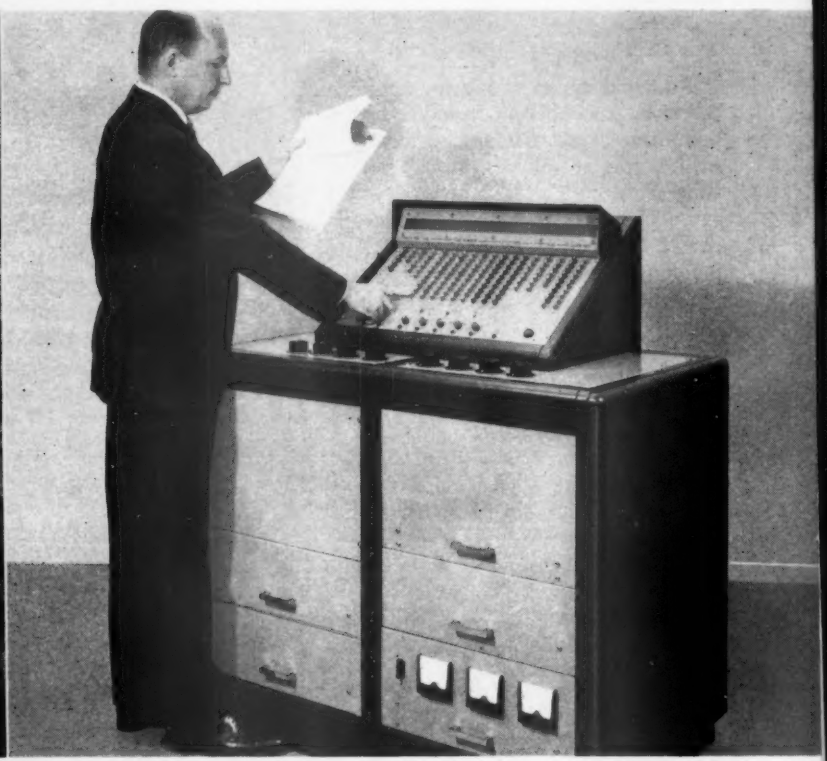
ideas and news:



Full-load demonstration proves 98%-plus drive efficiency: A-C factory engineers recently demonstrated the high efficiency of TWINDUCER grinding mill drives. It ranged from 98.48% to 98.52%. This exclusive twin motor drive system divides mill load electrically, saves space, installation costs, minimizes gear wear.



Low-cost system automatically correlates bulk materials handling data: An A-C data-handling system now being installed in a midwestern coal tipple automatically weighs coal shipments and transmits all pertinent data to a central invoicing location. Similar systems in the cement industry, applied to raw materials as well as loading of bulk or bagged cement, provide accurate quantitative data. This system has been developed by A-C through its exclusive **Systemation** service.

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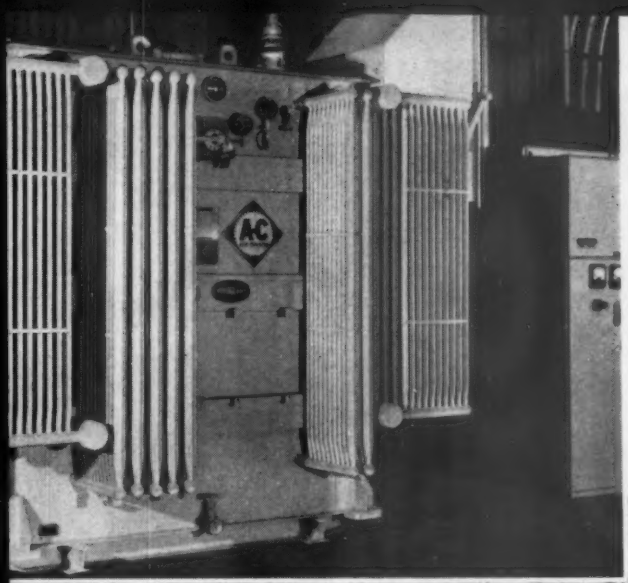


A-C transformer offers multiple benefits: Located close to the load center in a Midwest cement plant, this 5000-kva CHLOR-EXTOL filled transformer provides reduced power losses, better regulation, and flexibility for expansion. Types available also include oil-filled, liquid-filled, and dry-type units.

High-output — low installation costs: One of the world's largest aggregate-handling screens met the needs of an aggregate producer for higher output and minimum installation costs. This 7 by 20-ft RIPL-FLO screen handles 600 tons per hour and is mounted on foundations previously used for a 5-ft screen.

So low, two fit where one used to go: This new SPACEMAKER control center is the first completely new 2- to 5-kv motor controller development in more than a decade. Two-high design can cut floor space needs in half. Full drawout construction makes it the safest, most easily accessible controller available. Flame-retardent, track-resistant PYRO-SHIELD insulation adds reliability. Walk-in SHELTER-CLAD enclosures availabe for outdoors.

A-C INDUSTRIAL EQUIPMENT DIVISION: motors, generators, controls, rectifiers, pumps, compressors, crushers, mills, screens, kilns, coolers, industrial systems.

OTHER A-C PRODUCTS: thermal, hydro and atomic electrical generating equipment; switchgear, transformers, unit substations; tractors, earth-moving equipment, engines, lift trucks.

ALLIS-CHALMERS

Enter 44 on card, page 177

1960 National Safety Competition

Record number of injury-free operations reported by 675 mines and quarries entered in latest contest

By JOHN C. MACHISAK

Chief, Branch of Accident Analysis
Division of Accident Prevention and Health
U. S. Bureau of Mines

THE number of participants in the 1960 National Safety Competition equaled the record of 675 established in 1958. Begun in 1925, this safety contest is conducted annually by the Federal Bureau of Mines in cosponsorship with *The Explosives Engineer,* which provides the Sentinels of Safety trophies and the safety banners for the winner of each of the six competitive groups: underground anthracite mines, underground bituminous-coal and lignite mines, underground metal mines, underground nonmetal mines, open-pit mines, and quarries.

During the 1960 competitions, employees of the 675 participating mines and quarries were exposed for almost 128 million man-hours to the hazards of extracting this nation's minerals. They suffered 2,409 disabling work injuries in the process—53 of which were fatal—resulting in an over-all competition disabling work injury frequency rate of 18.828 per million man-hours. In addition, 548,909 days were lost or charged because of these injuries, resulting in an over-all competition severity rate, per million man-hours, of 4,290.135. Both rates were the third-lowest recorded since the start of the competition.

294 Injury-Free Participants

The most noteworthy achievement of participants in the 1960 competition was the new record number which succeeded in operating throughout the contest year without a disabling work injury—294, or 43.6 percent of all participants. Competitors with perfect safety records amassed 26,243,983 man-hours—equivalent to more than 20 percent of the man-hours accumulated by all participants.

More than two perfect safety records out of every three were attained by participants from the quarry group. This division has consistently accounted for a major share of the competition's perfect safety records. The quarry group also achieved the highest ratio of perfect safety records to total number of participants—200 out of 323, or 62 percent. It was followed by open-pit with 52 out of 117, or 44 percent; underground nonmetal mines with 18 out of 53, or 34 percent; underground metal mines with 10 out of 55, or 18 percent; and underground bituminous-coal mines with 14 out of 117, or 12 percent.

1960 Winners

Top safety honors in the two nonmetals group classifications of the 1960 National Safety Competition were won by the following participants in each group:

Nonmetal mines, underground: Jonathan Mine, Zanesville, Ohio (Columbia Cement Corporation)—698,930 man-hours.

Quarries: Calcite Quarry, Rogers City, Mich. (Michigan Limestone Division, U. S. Steel Corporation)—983,750 man-hours.

The winning mineral operation in each group is awarded a bronze Sentinels of Safety trophy and a Sentinels of Safety flag, both of which are provided by *The Explosives Engineer* in recognition of the best safety record in its group. In addition, every employee and official of the six winning operations receives a Certificate of Accomplishment in Safety from the Bureau of Mines in recognition of his part in compiling the trophy-winning record. Certificates of Achievement in Safety are awarded to the mineral operations placing second, third, fourth, and fifth in each group, as well as to all participants amassing 30,000 or more man-hours during the competitive year without a disabling work injury.

Any underground mine, open-pit, or quarry in the United States is eligible to participate in the National Safety Competition conducted annually by the Bureau of Mines. Contest rules and application blanks may be obtained from the Branch of Accident Analysis, Bureau of Mines, U. S. Department of the Interior, Washington 25, D. C., or from any one of the field offices of the Bureau.

Certificate of Achievement Winners

The mines and quarries awarded Certificates of Achievement are listed below, together with the man-hours each amassed during the contest year.

Certificates are awarded also to each disabling injury-free mine or quarry that worked 30,000 or more man-hours during the 12 consecutive months of each contest.

Nonmetallic Mines—Jefferson Island Mine, Jefferson Island, La., operated by Jefferson Island Salt Division, Diamond Crystal Salt Company, 467,026 man-hours without a disabling work injury.

Mississippi Mine, Ste. Genevieve, Mo., operated by Mississippi Lime Company, 195,043 man-hours without a disabling work injury.

Grand Rapids Mine, Grand Rapids, Mich., operated by Bestwall Gypsum Company, 179,770 man-hours without a disabling work injury.

Ironton Mine, Ironton, Ohio, operated by Alpha Portland Cement Company, 160,528 man-hours without a disabling work injury.

Quarries—Cedarville Quarry, Cedarville, Mich., operated by Michigan Limestone Division, U. S. Steel Corporation, 308,734 man-hours without a disabling work injury.

Hillsville Quarry, Hillsville, Pa., operated by Michigan Limestone Division, U. S. Steel Corporation, 254,372 man-hours without a disabling work injury.

Bessemer Quarry, Bessemer, Pa., operated by Bessemer Limestone and Cement Company, 199,581 man-hours without a disabling work injury.

Alpena Quarry, Alpena, Mich., operated by Huron Portland Cement Company, 192,351 man-hours without a disabling work injury.

Enter 47 on card, page 177 →

BIGGEST LINE

OF HIGH-PERFORMANCE SCREENS

Allis-Chalmers has it. And what does that mean to you? Assurance that you'll get *THE* screen to best help you cut processing costs and improve product flow.

Consider the screen illustrated: A high tonnage 8' x 16' model XH *ROM* scalper. This husky type screen can handle almost unlimited feed sizes and tonnages. Looks capable and it is — as are all members of the A-C line.

The dependable *Low-Head* horizontals have been solving screening problems for years. The others, *Ripl-Flo, Aero-Vibe,* the four bearing screens and the *all new,* modern heavy duty vibrating feeder, combine to fulfill any of your scalping, sizing, rinsing, washing, media drain and dewatering needs.

Ask your A-C representative to help with your screening requirements or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. A-1537

ROM, Low-Head, Aero-Vibe and Ripl-Flo are Allis-Chalmers trademarks.

ALLIS-CHALMERS

Industry Personalities

H. B. Schmidhauser

HAROLD B. SCHMIDHAUSER, founder and director of the American Management Association's course in executive action, has been appointed to the post of director of public and industrial relations with New York Trap Rock Corporation. He succeeds ARTHUR M. GRIFFIN.

CHARLES DE CURTONI has been appointed general credit manager for Permanente Cement Company. He was formerly division credit manager in southern California, and succeeds CHARLES M. CHAPMAN, who has retired after more than 16 years with Permanente.

The following changes have been made in management in the Lime Division of Warner Company:

CLARENCE B. RULE has been appointed manager of operations of the Lime and Limestone Division

C. B. Rule

H. A. Corre

plants, including Cedar Hollow, Bellefonte and Union Furnace. He formerly held positions in the firm's engineering department.

At Warner's Bellefonte Plant, HERSCHELL A. CORRE has been appointed plant manager.

JOHN A. CARVER has been elected president of the Silica Corporation of America. He is also chairman of the board. He succeeds THOMAS CARSON, who has resigned his posts of president and director of the firm. Mr. Carson will continue in the capacity as consultant to Silica Corporation. NORMAN EMERICH, re-elected treasurer of the firm, was also elected a vice-president.

J. F. Weigel

JAMES F. WEIGEL was elected vice-president, manufacturing, for Medusa Portland Cement Company. He joined Medusa in 1936; he was affiliated with the United States Gypsum Company for a period, but returned to Medusa in 1949. Most recently he held the title of assistant vice-president, technical.

WILLIAM F. PIERCE, formerly general superintendent of all slag operations of The Buffalo Slag Co., Inc., has been promoted to the post of general superintendent of slag, stone, and gravel operations.

EARL PIXLEY, superintendent of the Franklinville plant, is now superintendent of the sand and gravel division, a newly created position. His former post has been filled by his son, JACK PIXLEY.

The engineering department will continue to be directed by WILLIAM PIERCE, with DAVE MCGREGOR filling the position of plants engineer.

IRVING M. CRAIG has been named superintendent of the Woodville, Ohio, plant of Standard Lime and Cement Company. He was costs administrator in Martinsburg, W. Va., for Standard since 1956.

He has been succeeded in that post by KENNETH R. ECKROTE, who has been transferred from the Dragon Cement Company's plant at Northampton, Pa., where he served as a supervisor in the management organization.

RONALD G. HOHNSBEEN has been elected controller of Permanente Cement Company.

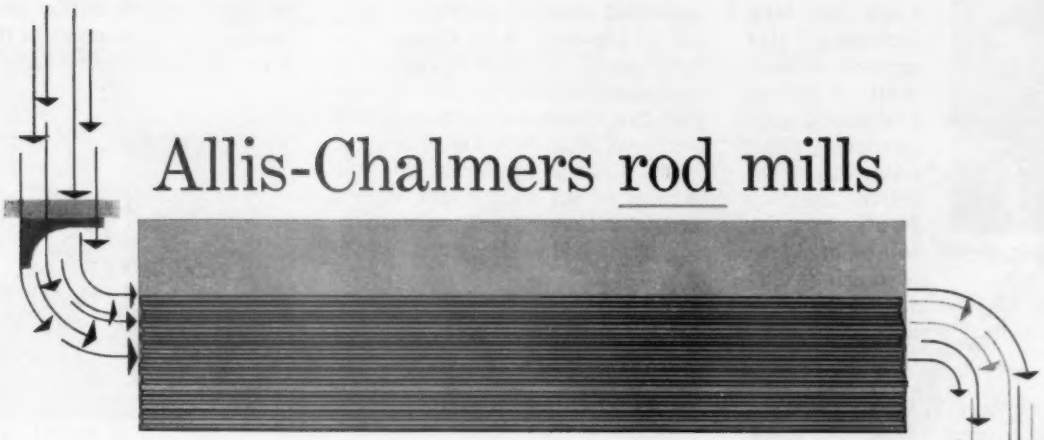
PAUL E. ROGERS, vice-president and controller, has retired after more than 30 years with the Kaiser organization.

Mr. Hohnsbeen's new duties include controllership of Permanente Steamship Corporation and Permanente Trucking Company, both subsidiaries.

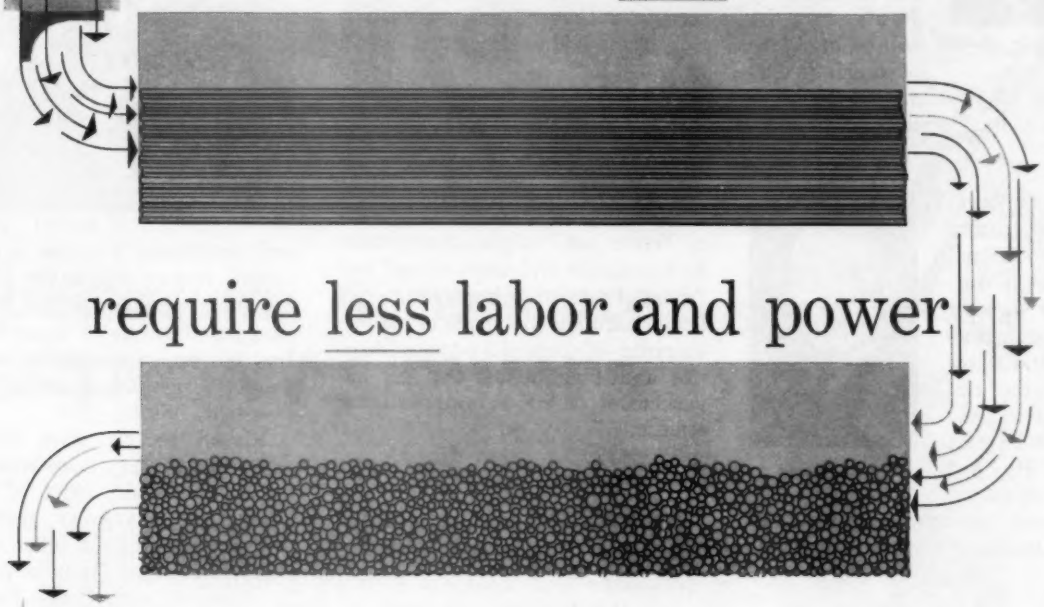
ANDREW W. KOMONCHAK has been appointed credit manager for New York Trap Rock Corporation. He succeeds the late JOSEPH P. DEVELIN.

MICHAEL BANKS has been named district manager of Dewey Portland Cement Company's new terminal at North Little Rock, Ark. He will also be in charge of general sales operations in Arkansas. NEAL RHODES and JOHN LIVESAY have been named assistants to Mr. Banks.

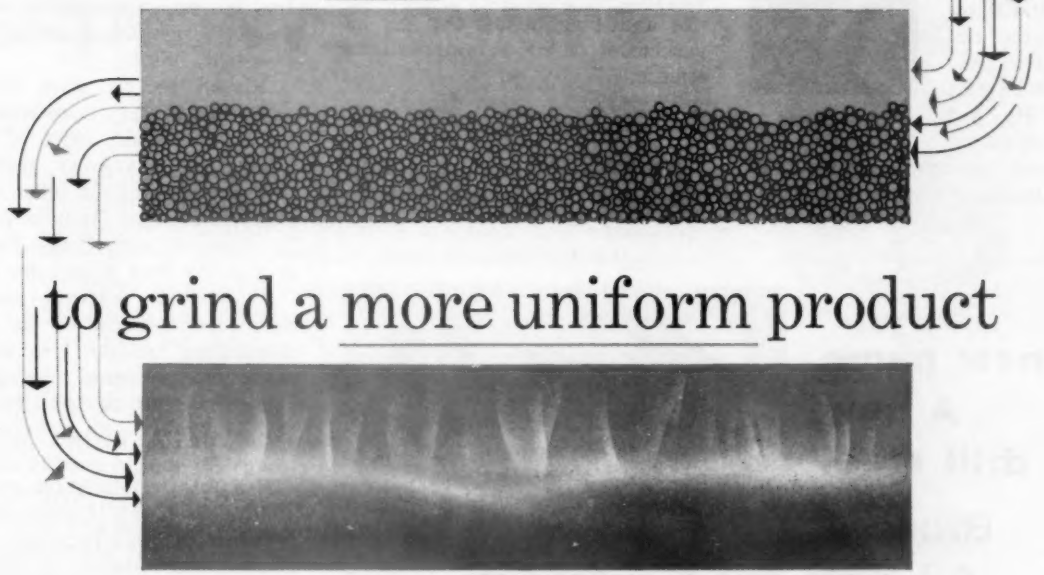
• Leo L. Warren (right), retiring manager of equipment service for Vulcan Materials Company, was recently honored at a special dinner for 36 years of service with Vulcan. William C. Ireland (left), president of Birmingham Slag Division, presented him with a silver service as the highlight of an evening. Mr. Warren was cited for "his long and outstanding service" to this company and community. He joined Birmingham Slag as chief electrician, and was later promoted to superintendent of maintenance, and later general superintendent. In 1957, he was named manager of equipment service.



Allis-Chalmers rod mills

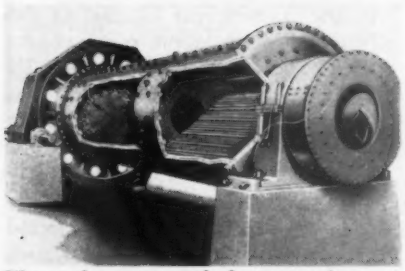


require less labor and power



to grind a more uniform product

for better rotary kiln feed



The modern approach for preparing wet kiln feed in open circuit. The first compartment contains rods to closely size the material for following ball compartment.

Allis-Chalmers engineers and builds rod mills, *Ballpeb* compartment-type ball mills, and *Rodpeb* combination rod-and-ball mills. Write to Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

Ballpeb and *Rodpeb* are Allis-Chalmers trademarks. A-1554

ALLIS-CHALMERS

E. J. Cole

EDWARD J. COLE has been appointed chief engineer of Bestwall Gypsum Company. Headquartered at the company's research center in Paoli, Pa., he will be in charge of engineering for some 10 gypsum plants throughout the United States and Canada.

J. O. Sherod

JOSEPH O. SHEROD has joined Alpha Portland Cement Company as director of manufacturing. He will supervise the operation of Alpha's eight plants. He had previously served as general manager of production, Lime Division, Warner Company.

PHILIP N. BUSHNELL has been appointed director, personnel services of Universal Atlas Cement Division of U. S. Steel Corporation. He succeeds GORDON C. HUTH, vice-president, industrial relations, who is retiring after 46 years of service.

Mr. Bushnell is past chairman and member of the Executive Committee of the Cement and Quarry Section of the National Safety Council.

T. C. POWERS, research counselor of the Portland Cement Association, has received an honorary Doctor of Science degree from the University of Toledo for "unique contributions to research in civil engineering" and "unusual service to humanity." Particular mention was made of his furtherance of colloidal-physics theories and experiments, and his advancement of concrete and silicate science.

GEORGE J. PEER has been named general sales manager of Basic Incorporated. He was formerly sales manager, Chicago district sales manager, and sales manager for the company's furnace products division.

H. Magrath

A new sales office has been established by Universal Atlas Cement at Port Everglades following the recent acquisition from Ponce Products, Inc., of the latter's cement storage and distributing facilities at that location. HARDY MAGRATH, formerly executive secretary of the Concrete Research Institute of South Florida, Inc., has been appointed manager of South Florida sales, and heads the new sales office.

Named to his sales staff are JAMES L. BAKER, transferred from the Dayton, Ohio, office to Miami; GILBERT L. HATAWAY, transferred from the Birmingham office to West Palm Beach; and GEORGE W. KELLY, formerly with Ponce Products, now at the Port Everglades office.

CLIFTON L. SCHANDELMAYER is now superintendent of the cement distributing facilities. He was formerly vice-president, operation, of Ponce Products, at Port Everglades.

F. NORMAN ANDERTON, treasurer, Vulcan Materials Company, has been elected vice-president of the Birmingham Control of the Controllers Institute of America.

At the same time, JOHN V. VAN PELT III, vice-president, finance, and controller of Vulcan, was named a C.I.A. director.

Mr. van Pelt has also been given the John Pugsley award for 1960-61 by the Birmingham Chapter of the National Association of Accountants. The award is given annually to the member of the chapter who makes the greatest contribution to accounting literature.

JAMES J. HAGUE has been elected vice-president, sales, for Kaiser Gypsum Inc., and ERNEST H. SCHAPER has been named vice-president, operations.

A new name
A new
drill steel
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DRILLALLOY

- Our own special analysis 1½" round alloy steel.
- Large hole for better blowing and cleaning.
- Shot Peened to insure added fatigue resistance.
- Uncouple by hand—No wrenches necessary.
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- Rethreadable on the job without heat treatment.
- A round steel—no corner nicks to cause breakage.
- Coated with Special Formula Rust Inhibitor.
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carbide ROK-BITS, DRILL STEEL, COUPLINGS, ADAPTERS, STRIKING BARS, HOLE-SAVERS

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Below: Another recent shipment of Thomas DURABLE Dredge pumps to the Midwest.

Spectacular Acceptance of THOMAS PUMPS explained

Acceptance of THOMAS DREDGE PUMPS by sand-and-gravel operators is spectacular. There must be sound reasons why THOMAS PUMPS are thus first choice in hundreds of cases. Some of those reasons include:

1. NEW DESIGN: Permits use of modern alloy (Thomas NI Hard) in manufacture of pumps, which results in maximum service.

2. LONG LIFE: Wearing parts in most cases last two to four times as long as manganese steel.

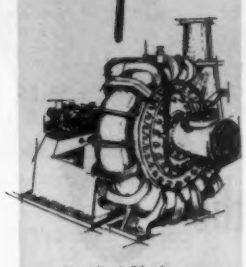
3. HIGH PRODUCTION: Close-running clearances and smooth contours insure higher efficiency.

4. CONTROLLED MANUFACTURE: Dependability is built-in. All parts of Thomas pumps are produced in our own plant by skilled craftsmen under supervision and control of our own metallurgists and engineers.

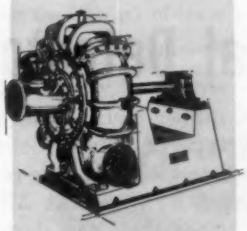
5. CUSTOMER SERVICE: Qualified and experienced Thomas pump engineers inspect customer's operation, study his needs and make recommendations.

6. MAINTENANCE PARTS: Prompt shipment from stock, usually within a few hours after the order is received.

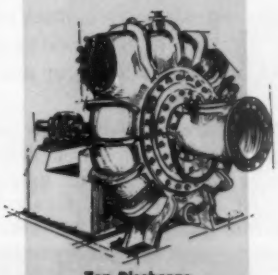
7. SIZES: Full range of sizes, 6″ through 16″, discharge at bottom, top, right and left.



Vertical Discharge



Bottom Discharge



Top Discharge

START PLANNING NOW FOR A NEW THOMAS PUMP INSTALLATION FOR THE SPRING OF 1962. YOU WILL BE GLAD YOU DID!

THOMAS FOUNDRIES, Inc.

P. O. BOX 1111, BIRMINGHAM, ALABAMA

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Protect your Crushers

with the RCA Electronic Metal Detector

Steel rods, dipper teeth, tools, and any other type of tramp metal—*magnetic or non-magnetic*—are readily discovered by the RCA Metal Detector before they can damage your equipment. This special industrial equipment is designed to withstand heavy-duty service, dust and moisture. Available in a wide range of sizes. Easily installed over existing conveyor lines.

FREE literature telling of the savings possible with the RCA Metal Detector is yours for the asking. Write to RCA, Industrial Controls, Dept. A-236, Bldg. 15-5, Camden, New Jersey.

RCA The Most Trusted Name in Electronics
RADIO CORPORATION OF AMERICA

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Among the associations' members and guests in attendance were (l. to r.): Kenneth E. Mayer, executive secretary for the two groups; Charles A. Smith Jr. (Oil City Sand and Gravel Co.), president of the state sand and gravel association; Russell S. Reimer (Houdaille Construction Materials, Inc.); Vincent P. Ahearn, managing director, N.S.G.A.-N.R.M.C.A.; E. K. Davison (J. K. Davison & Bro.), president of the National Sand and Gravel Association; and Charles A. Nicholson (Centre Concrete Co.), president of the state ready-mix group.

Pennsylvania Sand-Gravel, Ready-Mix Men Hold Third Joint Technical Session

DURING the third joint technical outing of the Pennsylvania Sand and Gravel and Pennsylvania Ready Mixed Concrete associations, held recently at the Shawnee Inn, Shawnee-On-Delaware, Pa., the program effectively combined consideration of internal business, an informative plant tour, and social activity in a resort setting.

A joint board meeting on the opening day was followed by individual board sessions of the two groups. Discussions involved several ideas aimed at furthering the service of each association to individual members as well as the respective industries in the state.

One of the highlights on the second day of the meeting was a tour of the Keystone Portland Cement Company's quarry, plant, and laboratory at Bath. Among the many points of significant interest to the producers were the quarry operations, the kiln department, product bagging, rail and truck bulk-loading facilities, and the laboratory—particularly the testing procedures.

Another tour highlight was a visit to Houdaille Construction Material's sand and gravel and ready mixed concrete operations at Mt. Bethel. A prime point of interest in this tour was the company's solution of an operating problem. The presence of considerable organic material in the firm's sand and gravel deposit led to the installation of a log washer. The unit has been effectively cleaning plant feed to provide quality material free of organic debris.

Speakers and guests at a joint banquet on the evening of the second day included Charles A. Smith Jr. (Oil City Sand and Gravel Company), and Charles A. Nicholson (Centre Concrete Company), presidents of the sand and gravel and the ready mixed concrete groups, respectively; Kenneth E. Mayer, executive secretary of the two state associations; Edward K. Davison (J. K. Davison & Bro., Pittsburgh, Pa.), president of the National Sand and Gravel Association; and the featured speaker, Vincent P. Ahearn, managing director of the National Sand and Gravel Association and the National Ready Mixed Concrete Association.

Mr. Ahearn described how the national associations cope with the various pieces of legislation affecting these industries. So-called lobbying techniques are not conducted at any time; rather, the associations, because of their reputation as the fore-

most authorities on ready mixed concrete and sand and gravel operations in the United States and Canada, are regularly called upon to appear before open hearings of both House and Senate committees. It is here that association committee chairmen relate viewpoints of industry leaders on proposed legislation.

Mr. Ahearn also discussed what he terms the equally interesting side of Washington activities, the effect of the press on the Presidents as they attempt to pass platform legislation, handle world affairs, and meet domestic issues. Inquiring reporters have been both a tribulation and a blessing to Presidents as the latter increasingly expose themselves to open press sessions.

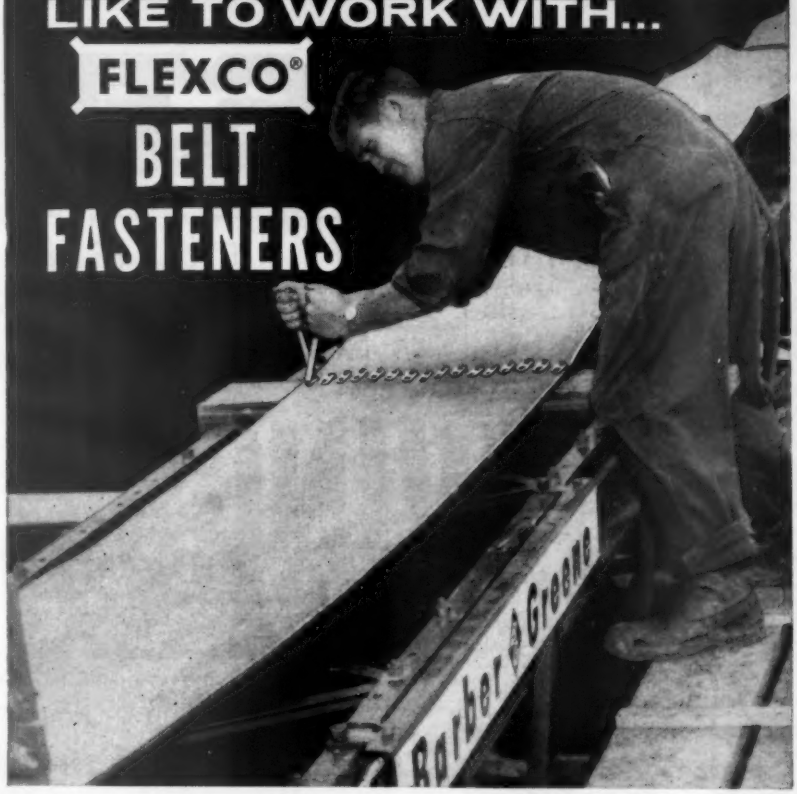
The sand and gravel producers heard an extremely interesting talk on cationic and anionic emulsions, delivered by Felix Arkuszeski, technical service engineer for the American Bitumuls and Asphalt Company, Baltimore. The ability to determine the electric charge of sand and gravel and then to develop an asphalt with an opposite charge has and will mean much to bituminous paving contractors as they cope with wet aggregates and inclement or cold weather.

Ready mixed concrete delegates heard Herbert Cook (vice-president, engineering, The Master Builders Company, Cleveland, Ohio) speak on the various admixtures now known to the industry. It was a basic talk primarily to familiarize members with the new types of admixtures available on the market; their designed purpose; and the actual effects on concrete, formwork, and other materials in eventual contact with finished concrete. The use and scope of admixtures are increasing as technical requirements are made by producers, users, and architects.

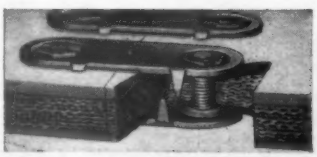
The Technical Committee members conducted a panel discussion on certain highway department specifications that are of concern to ready mixed concrete producers—both transit- and central-mixed. As a result, the committee was instructed to request a hearing with highway officials for the purpose of clarifying certain existing specifications. After this hearing a detailed report will be sent to all association members.

BELT INSTALLATION MEN LIKE TO WORK WITH...

FLEXCO® BELT FASTENERS



Lowell Lynde, Service Engr., Barber-Greene Co. completing the installation of a FLEXCO splice.



Cutaway of a FLEXCO application showing the compression plates, teeth and precision-made bolts and nuts.

He says, "I've spliced most of the belts our Chicago office has sold throughout Illinois and northern Indiana. FLEXCO fasteners have been used on all of them without any trouble. They are easy to install and hold up well regardless of the material conveyed."

PROTECT YOUR INVESTMENT IN CONVEYOR BELTS WITH FLEXCO . . . the quality fastener for all heavy-duty conveyor belt applications: COAL & METALS, SAND & GRAVEL, CRUSHED ROCK, CONSTRUCTION EQUIPMENT, etc.

Available in Steel, Monel, Stainless, Everdur. Also Promal top plates.

FLEXCO "25-PAK"

"25-PAK" contains enough fasteners to join common belt widths.

ORDER FROM YOUR DISTRIBUTOR, OR WRITE TO US FOR BULLETIN F-112.

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Flexible STEEL LACING COMPANY

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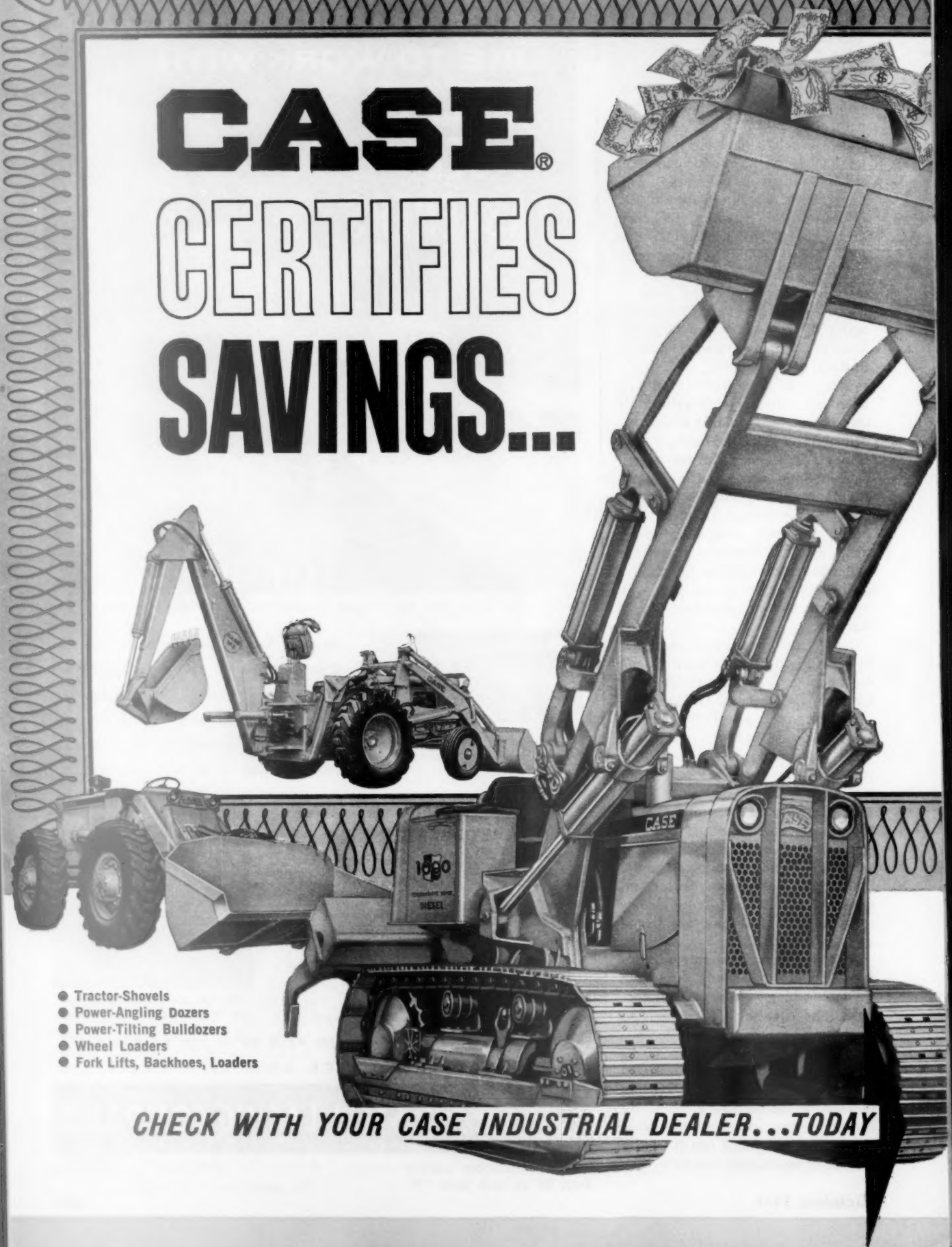
CERTIFIES

SAVINGS...



- Tractor-Shovels
- Power-Angling Dozers
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- Wheel Loaders
- Fork Lifts, Backhoes, Loaders

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...ON INITIAL PURCHASE PRICE!

The savings are certified to be as represented — $200, $500, $1000, up to $2000 on some models.

Price alone doesn't justify the buying of a piece of equipment. But *these* are machines with double-barrelled savings... big savings in initial cost PLUS money-making performance that pays dividends every day they work for you.

You'll find the machine that's just right for you in this seasonal clearance sale IF you act now. CASE CRAWLERS with exclusive Terramatic® Transmissions that speed up the pace of production and insure a better margin of profit on close-bid jobs. WHEEL TRACTORS with torque converter drive and an unequaled selection of Case-built backhoes, loaders, fork lifts. WHEEL LOADERS with safety-engineered balanced design that eliminates bucking, nose-diving and side-sway.

You pick the machine . . . and your Case Industrial dealer will *prove* its money-making ability in an on-the-job demonstration. Quote you the deal of a lifetime too... all at no obligation. Call him now! J. I. Case Company, Racine, Wisconsin.

A DEMONSTRATION

will show you how

CASE

Industrial Equipment Keeps your

PROFITS ROLLING IN!

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THE USEFULNESS OF A LIMA

HOW TO CAST FOR PROFIT

Long, precision casts with Lima draglines help pull in extra excavating profits. Limas are noted for fast, smooth digging cycles—partly the reason they are *the most useful make machines you can buy!*

But there is more to outstanding performance than meets the eye. It is backed up by Lima's traditional quality in manufacturing and design.

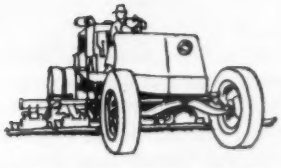
Big, wide drums are mounted on antifriction bearings for smooth, free spooling when the bucket is cast. Balanced machinery weight does away with need for excessive counterweight so that you can work with *long booms at low angles.* Long, wide crawlers hug the ground for extra stability on soft footings; antifriction bearings protect all wearing points. On Limas all gears, smaller parts and shafts that are subjected to extra wear are flame or induction-hardened for longer life.

Maintenance is low because Limas are better built. For the same reason Limas can be counted on to stay on the job and earn more profit for you. Ask us to prove it to you.

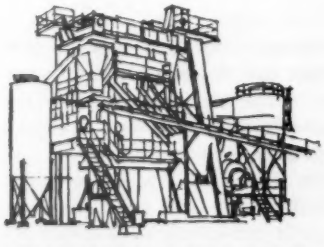
6120

CAPACITIES

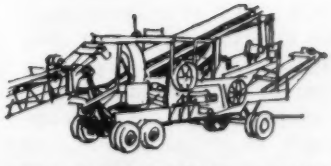
DRAGLINES—Variable
TRUCK CRANES—20 to 80 tons, boom-jib combinations to 250 ft.
WAGON CRANES—20 to 75 tons
CRAWLER CRANES—15 to 140 tons
CRAWLER MOUNTED SHOVELS—¾ to 8 cu. yd.
CRAWLER MOUNTED PULLSHOVELS—to 4½ cu. yd.



LIMA MODEL D ROADPACKER—Six vibrating shoes consolidate fast, deep for profitable single-course construction; available in 12-shoe Super model.



LIMA MADSEN ASPHALT PLANTS—available in models with batching capacities from 1000 to 10,000 lb.



LIMA AUSTIN-WESTERN portable and stationary crushing, screening and washing equipment; including jaw crushers, feeders, screens, elevators, conveyors, bins.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division • Lima, Ohio

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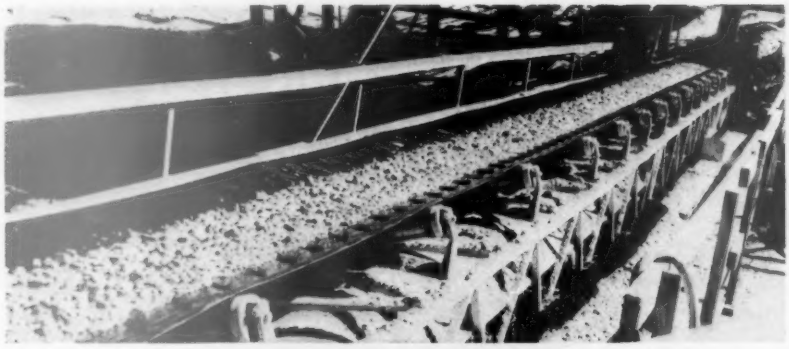
new machinery



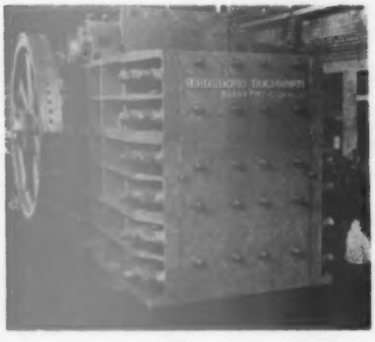
● A ribbed conveyor belt to handle wet, slippery, or soupy materials, such as a mixture of gravel and water up an incline has been designed by Raybestos-Manhattan, Inc.

The chevron-shape ribs or cleats prevent the wet materials or water from running back, even when on an incline because the cleats form pockets that trap the water and hold the material. The belt can be reversed so that water will drain out of the mixture, if desired. **(350)**

● What is believed to be the largest jaw crusher ever sent to Chile has been built by the Birdsboro Corp.

The 60 in. by 84 in. Type C deep-frame jaw crusher is for use at a new iron ore mine in Algarrobo, Chile. The crushing plant and the mill have been engineered and designed by Koppers Company, Inc., and erected by their Chilean affiliate, Sigdo Koppers, A.S. The primary crusher, designed for extra heavy duty, has been delivered and assembled.

In operation the machine will be set to reduced scalped ore up to approximately 60 in. size to 8 in. size or less at a rate of up to 800 metric tons per hour. Two 4½-cu. yd. electric shovels will feed the crusher.



The crusher, which weighs about 550,000 lb., was made in sections to facilitate handling and transportation. It is driven by a 300-hp. motor with a V-belt drive. **(351)**

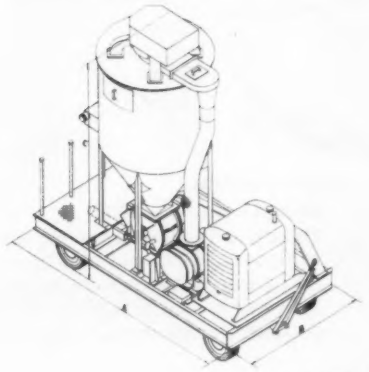
● A continuous filter-type portable transfer unit for dense-stream pneumatic conveying of dusty materials, reportedly the first, has been announced by Fuller Co.

The portable Airveyor R unit is available for 3- and 4-in. conveying lines. It can handle such milled and pulverized materials as clay, lime, and others.

The principal design feature of the transfer unit is the completely automatic filter. The filter elements are cleaned continuously by a single master valve driven by a ⅛-hp. motor. The valve has only one moving part, the rotor, which is carried in two bearings and sealed for life.

The transfer unit is of the combination vacuum-pressure type, with the vacuum side picking up the material, and the pressure side delivering it to the desired destination. Incoming material is separated from the conveying air by the continuous filter on the vacuum (intake) side of the blower and reintroduced through an airlock into the conveying air on the pressure (discharge) side of the blower.

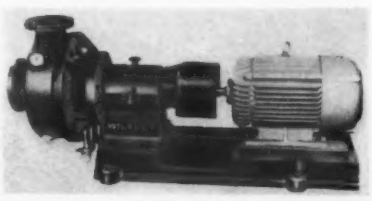
The airlock is driven from the blower shaft. If the airlock is prevented from turning, because of the entrance of foreign material, an overload discharge release instantly disengages the drive and cuts off the power.



(352)

● A steam-jacketed acid pump is being introduced by A. R. Wifley and Sons, Inc., that will handle any solution that freezes above ambient temperatures such as asphalt, ammonium nitrate, liquid sulphur, etc.

Multiple steam line connections are provided on the case, case plate, and stationary seal ring housing. In use, any two connections on each jacketed part are connected to the incoming and return steam lines. Steam connections are tapped for ¾-in. pipe. **(353)**



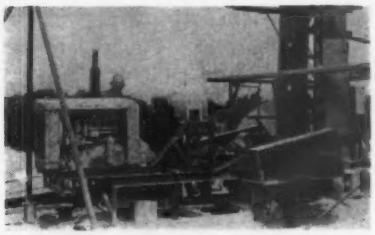
and equipment

for further information use card on page 177

• A V-belt, made by The Gates Rubber Company, solved a problem for H. M. Haith, Beatrice, Neb., in his use of a limestone crusher.

A diesel engine was used to power the crusher. However, the governor would accelerate the engine at a frequency in excess of 12 times per minute because of power surges under load.

Gates suggested that an electric motor be connected to the engine drive shaft through a V-belt drive. When the crusher takes a heavy load the over-running electric motor takes up the surge by boosting the power to the shaft. The drive has been functioning successfully for three years.



(354)

• A hand-portable, 77 lb. gasoline-operated hopper-car vibrator, the CCVG-3000 "Big Shake," capable of producing an unbalance force of 6,600 lb., to move such materials as wet sand, rock phosphate, cement, gravel, etc., has been developed by Martin Engineering Co.

Because it requires no external power source, it is ideal for remote-site unloading.

A built-in mounting clamp allows attachment to any rigid angle on open or covered cars without auxiliary equipment and is adaptable to all bulk-carrying rolling stock.

One man can perform all unloading operations. (355)

• The Bulkmaster BJ-2 all-bulk model made by Winger Manufacturing Company is reported to have a discharge rate of one ton per minute.

Two features of the model include direct drive hydraulic motors on all the augers—eliminating roller chains and sprockets, and a filter that cleans the oil in the hydraulic system—reducing maintenance.

Reversible augers that enable the unit to load itself are available at additional cost. Bag and bulk units with the above features are also available. (356)

• A continuous forced-feed conveyor-loader with a capacity of 5- to 8-cu. yd. per minute in loose material has been announced by Massey-Ferguson for its industrial line of equipment.

Mounted to the M-F Utility 65 tractor, the elevating loader is used for such material handling jobs as scarifying and stripping, pit and bank loading, and stockpile loading.

The 30-in. wide conveyor, equipped with heavy-ply rubber belting, attains a speed of 500 f.p.m. Engine speed is 1,500 r.p.m. The overall length is 25 ft.; width, 7 ft.; operating height, 11 ft.; transporting height, 8 ft.; discharging height, 10 ft. The feeder blades, 33 in. long and 6 in. high, are made of ⅜-in. high carbon steel.

When equipped with the attachment the M-F Utility 65 tractor provides both transporting and operating power for loader operations.

Hydraulic controls in the cab are provided to raise and lower the moldboard, to raise for operating and lower for transporting of conveyor, and to control hydraulic motor for tractor drive, forward or reverse.

An engine-driven hydraulic pump is front-mounted on the tractor to furnish oil to operate the hydraulic cylinders which raise the elevating conveyor into position and to lower the moldboard assembly. The pump also furnishes oil for a hydraulic motor that operates the wheel drive mechanism when loading.

The feeder, a free-floating assembly that allows for rising and falling with the stockpile or windrow, is made up of large cupped, curved, feeder blades and end augers. The augers move material from the front and sides into the feeder blades. Material is then carried onto the conveyor belt for loading.

The over-all rig has two steering wheels. One is used when operating in the "reverse" or loading position. The other is used for operating forward when the unit is transported from job to job. (357)

● A fluidized solids pump, for pneumatic transfer of dry pulverized materials from storage to use bins, that is offered by Fuller Company, feaures compact design and flexibility of operation.

The new pump, Fuller-Kompact, Model 61, is designed for handling such materials as portland cement, limestone, and clay.

The over-all length is less than 7 ft., and the height to top of hopper flange is 16 in. V-belt drive to match screw speed and pump capacity requirements is utilized.

The pump and its air supply have been integrated into package form for actual applications to facilitate selection of proper power and air combinations. Sutorbilt single-stage positive-displacement blowers reportedly keep power and air requirements to a minimum.

The new pump reportedly can convey portland cement at rates to 240 bbl./hr. for conveying distances up to 125 ft. **(358)**

● Scales designed for laboratory or field weighing of aggregates samples are being marketed by Gilson Screen Company. The scales have features that adapt them to use with the Gilson Hydraulic and Standard Testing Screens and the Gilson Porta-Screen.

The scales are available in two models, both of platform design, with full capacity beams. No loose weights are required for either model. Beams are graduated in pounds, tenths, and hundredths. The scales have a permanent tare weight adjustment, allowing them to be used with the Gilson testing screens, whose screen trays are independently removable and have uniform tare weight.

All operating parts are enclosed beneath the platform. Both models are shipped fully assembled.

Model 107-X is a triple beam scale with a capacity of 107 lb., intended for use with Gilson Hydraulic and Standard Testing Screens. The platform is 16 by 21 in., and the over-all measurements are 6 in. high by 19 by 22 in.

Model 51-X (shown) is a portable, double-beam scale with a capacity of 51 lb. It weighs 24 lb., and is fitted with a carrying handle and a platform lock which secures the mechanism during transport. The platform measures 12½ by 16½ in., and the over-all measurements are 5¼ by 15½ by 18 in. The unit is particularly recommended for use with Gilson's Porta-Screen (a portable motor or hand-driven testing screen). **(359)**

YOU CAN TAKE IT WITH YOU

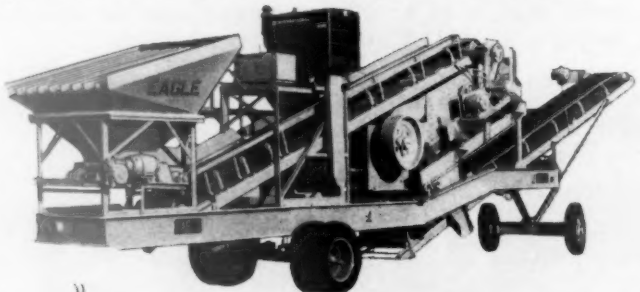
EAGLE'S MODEL 6600 PORTABLE JAW CRUSHER

Nearly every contractor knows that to build today's rapidly developing road system it's important to have portable crushing equipment.

Eagle builds a variety of crusher plants to help you get your share of this important business. One of these plants is shown below. This single pass gravel plant has a low hopper for front end loaders. The plant is available in four crusher sizes . . . capacities from 40 yds. per hour on 1" material up to 220 yds. per hour on 2½" (based on crushing approximately 25% of the pit run gravel).

Two big advantages are yours when you choose an Eagle Crusher . . .

1. You get a unit known for high-efficiency and trouble-free durability.
2. You get consultation with engineers who know how to design crushing equipment to do your job exactly right.



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EAGLE CRUSHER CO., Inc. GALION OHIO·U·S·A

JAW AND ROLL CRUSHERS, PORTABLE PLANTS, CAGE AND HAMMERMILLS, CONVEYORS, LOADERS

Enter 60 on card, page 177

for fertilizer grade ammonium nitrates

AUSTIN ACP PRIMERS

safe · safe · safe
economical · easy to use

Specifically manufactured for use with ammonium nitrates, Austin ACP Primers are insensitive to shock and abrasion . . . are unaffected by water. Also, Yellow Cap, Green Cap and Red Cap each possess rifle impact sensitivity of zero. If loaded in a hole that fails to detonate, they may be more safely removed than conventional primers.

Lightweight ACP Primers are also easier to use than regular dynamite types. Smaller than a man's fist and furnished with a central channel, they permit quick threading of detonating fuse through their entire length. In deep holes, additional primers can be rapidly added on the cord at desired intervals.

ACP Primers are offered in 6 color coded sizes. In addition to central fuse channel, Austin Brown Cap, Black Cap and Orange Cap each contain a well for inserting electric blasting cap when base detonation of a column of explosives is desired. Red Cap also is offered optionally with a 1 ft. length of detonating fuse for use where primer is placed inside a pre-packaged blasting agent. The fuse, which extends from the top of the primer charge, can be tied or hooked to the down line of detonating fuse in the hole.

AUSTIN ACP PRIMERS

Color Coding	Fuse Channel	Cap Well	Weight	Size	Number per box
Yellow	√		6 oz.	2" x 2"	100
Green	√		8 oz.	2" x 3"	100
Brown	√	√	8 oz.	1¾" x 3¾"	100
Red	√		12 oz.	3" x 2"	50
Black	√	√	12 oz.	2" x 4¼"	50
Orange	√	√	1 lb.	2¼" x 4⅛"	50

A-5887A

AUSTIN POWDER COMPANY

Cleveland 13, Ohio • Madisonville, Kentucky

● A liquid seal cooling system that eliminates aeration of the coolant, known as the major cause for engine cooling system failures, has been introduced by the Wood Co.

Air in the ordinary cooling system reduces effectiveness of the coolant and creates hot spots that cause metal fatigue and cracked blocks and heads, and also cause distorted valve action.

The cooling system traps the air from the system, thus eliminating the cause of hot spots. Regardless of the tilted position of the engine or radiator the cores are always covered wth coolant, and air cannot circulate.

In field tests the Wood liquid seal cooling system has increased engine efficiency as much as 10 percent, decreased fuel consumption up to 5 percent and reduced scaling in the engine to almost nothing.

It is recommended that the system be installed on new engines or completely cleaned engines to avoid trouble which could occur from old scale. **(360)**

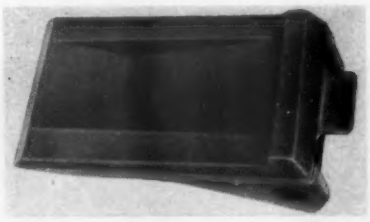
● The Dodge W-200 4-wheel drive Power Wagon features a 200-hp. V-8 engine with 318-cu. in. displacement, and has a maximum gross vehicle weight rating of 8,000 lb. The 4X4 test vehicles log about 6,000 mi. a month on dirt, gravel, and blacktop roads, as well as over off-highway terrain simulating the conditions encountered in actual operation. The unit is shown scaling a grade of 44 percent at the Chrysler Corporation Proving Grounds near Chelsea, Mich.

(361)

● Longer bucket life and proportionately less downtime for operators is claimed for the new General Metals 8027 Dragon Tooth.

Since first tooth wear is always at the corners, the ribbed tooth has forged ribs on the outside edges and keeps a cutting edge almost to the point of destruction.

An additional feature is that a ledge at the back end of the tooth wear surface directs excavated material over the shank or adapter and erases rapid wear of the expensive shank. **(362)**



New Hawk 401 Utiliscope

An Unprecedented Closed Circuit

Impressed by the potential value of closed circuit television but *depressed* by reports of high initial cost, expensive maintenance, constant requirement for difficult adjustments, and general unreliability? Then listen . . . to an unprecedented proposition from the world's oldest manufacturer of industrial closed circuit television: Indoor or outdoors, in any kind of weather with practically any degree of illumination, Diamond Electronics' all new Hawk 401 Utiliscope is *guaranteed on a money-back basis* to provide a sharp, clear picture of just about anything . . . perimeter barriers, gates, transfer points, loading docks, construction areas, vehicular movement, rooftops, hazardous areas . . . all from one safe, comfortable and convenient location. The Hawk requires no special housing, no special power supply, no special adjustments for changing light and weather conditions. Just plug it into an ordinary 110 V outlet and forget about it.

See for yourself. Call, write or wire and we'll arrange a demonstration within the week.

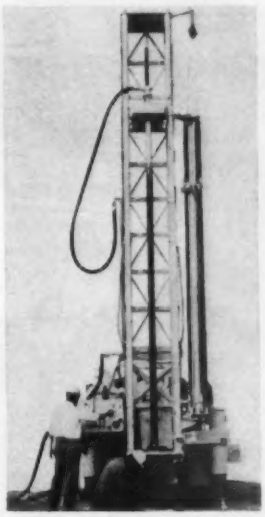
Diamond Electronics

Diamond Power Specialty Corporation • Lancaster, Ohio

● The Strokemaster Series of extra-heavy duty drills manufactured by Mobile Drilling, Inc., permits a choice of 12 ft., 17 ft., or 22 ft. stroke for greater flexibility in the selection of drilling tools and procedures. All three Strokemaster models take rotary or down-hole tools to 500 ft. in rock and NX cores from 2,000 ft.; auger 24 in.-diam. holes to 100 ft.; and perform any standard sampling or testing procedure.

Twin chain pulldowns powered by long-stroke hydraulic cylinders deliver a ram thrust of 6 to 12 tons. Features include a heavy-duty power train with dual-range torque converter, and a 4-speed industrial transmission that drives a 3-in. square, hardened steel kelly. The 4-in. tubular steel mast has 25,000 lb. single line pull rating.

Optional features include hydraulic-powered base for 24-in. on-off hole shift, drawworks, custom body, and leveling jacks. A choice of pumps, compressors, drilling tools and accessories, gas or diesel power, and truck, trailer, or crawler mounting is offered.

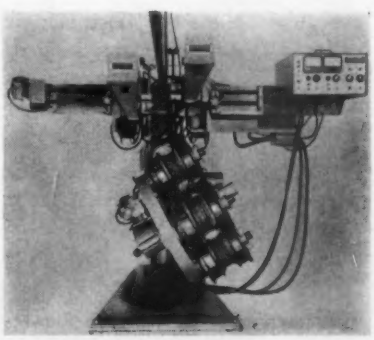


(363)

● A multiple-spindle, roller-idler rebuilding machine, Model MR, made by Stoody Company, is said to be the only roller-idler machine with offset main spindle support arm providing minimum head adjustment from tread to flange.

Other operating features include a columnized electronic control panel, full welding heads, wire straighteners, maintenance-free flux valves and shutoff mechanisms, and a carriage assembly that is engaged for directional travel by a 3-position lever.

The unit can be used with layer-wound coils or 500-lb. "Payoff-paks." The system includes two 500 amp. constant-voltage, 100-percent duty cycle power sources. **(364)**



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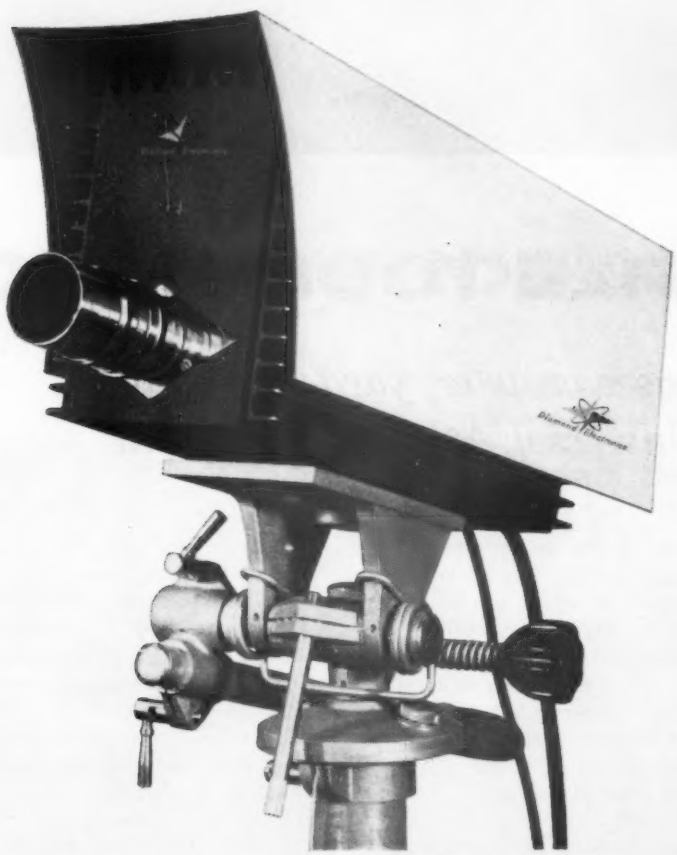

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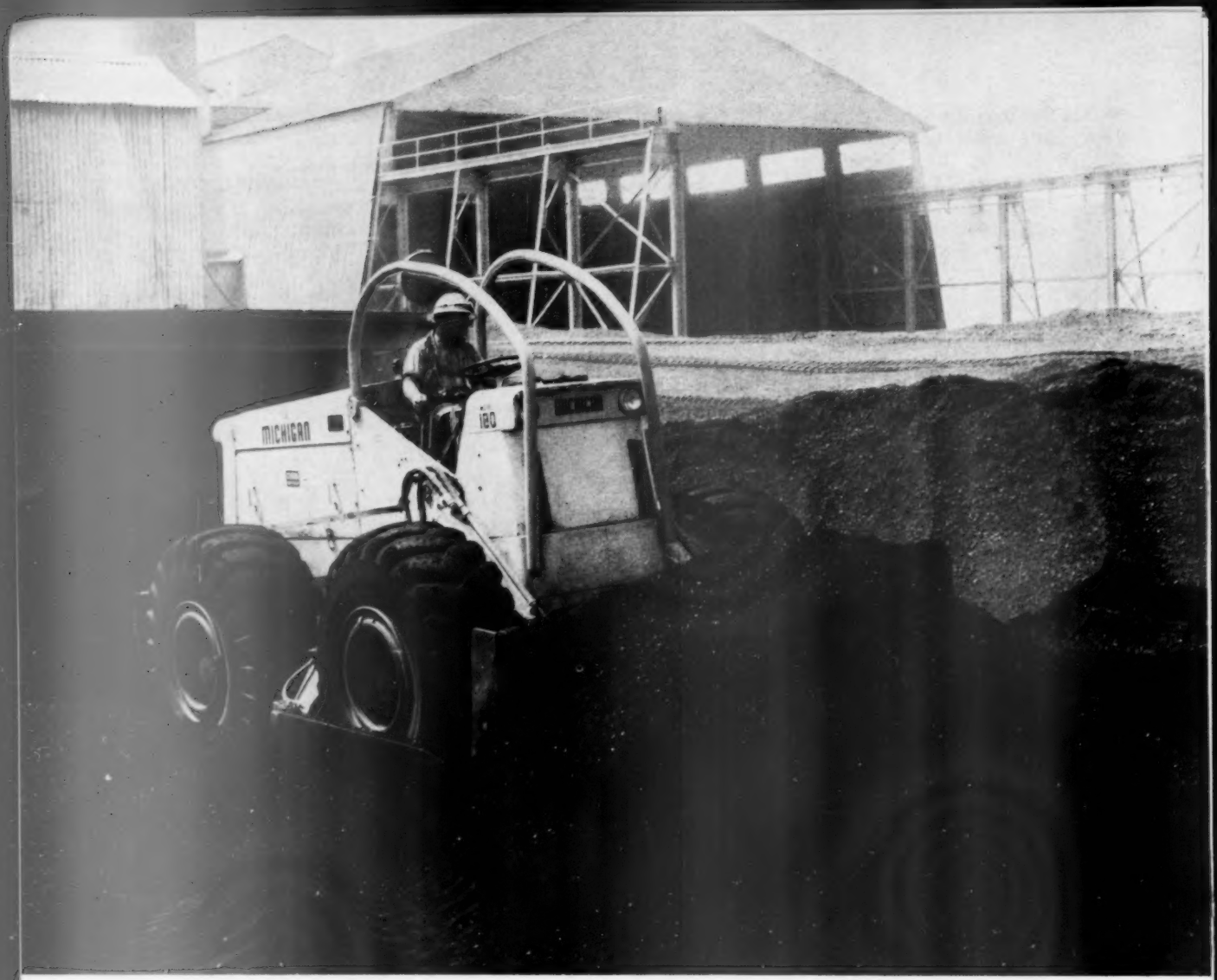


VERSATILE TOOL ON SIX

Mobile Michigan releases crawler, yard locomotive for other services at Universal Atlas Cement plant

A rubber-tired 162 hp Tractor Dozer, originally used at this plant to maintain a coal stockpile, has become a versatile production tool on half a dozen typical important dozing tasks.

Owner and operator of the machine, a Michigan Model 180, is the Fairborn, Ohio, plant of the Universal Atlas Cement division of U.S. Steel, New York, N.Y.

In a typical year, their unit dozes coal, clay, limestone, gypsum and cement clinker at an average rate of more than 300,000 tons. It also moves an average of 1,000 coal gondolas a year, each loaded car weighing 55 to 70 tons. And on many days it travels 15 miles under its own power to help clean up around shovels in the limestone quarry.

Dozes coal at speeds to 10 mph

One of the Michigan's most important operating traits, according to Universal Atlas plant executives, is its ability to thoroughly mix and remix coal on the stockpile. This is important because coal received from various mines differs in BTU content and must be blended for most efficient burning. They attribute the successful blending to two Michigan advantages. One, the Model 180 *dozes at speeds up to 10 miles per hour*. Two, its blade design *rolls* the coal as the Dozer moves forward.

Enter 64 on card, page 177

Spontaneous combustion eliminated

Equally important, production men say, is the Michigan's compacting ability on both the coal and clay stockpiles. They haven't had a coal stockpile fire since the 33,750 lb Tractor Dozer was placed in operation, and erosion by both wind and water on the clay stockpile has been effectively reduced.

Tows up to 5 railcars at once

Another task successfully assigned to the Michigan is "muling" coal cars from rail siding to coal shaker dump adjacent to the stockpile. By handling up to five loaded gondolas at a time, it has released a yard locomotive for other plant operations. After each dump, the rig spreads, mixes and compacts the coal in the stockpile, which varies in size up to 400 ft long, 200 ft wide, and 20 ft high. Feeding coal handling equipment for the kilns is also a regular Michigan task. Its production rate here averages 21,000 tons a month.

Stockpiles, compacts clay too

Whenever these coal handling chores permit, the Tractor Dozer is dispatched to work on other stockpiling, or to the quarry. First priority in this type of activity goes to building up clay stock, a task performed entirely by the Michigan. In this operation, the clay, stocked at the rate of 3,500 tons a month, is dozed into place without interruption in any other production area.

Equipped with coupler, Michigan "mules" both loaded and empty rail cars. Loaded cars weigh up to 70 tons each.

Michigan's big tires compact clay so effectively wind and water erosion have been substantially reduced.

Cleans shot rock

A variety of other dozing jobs are done by the machine as well. For example, it cleans up around rock shovels in the quarry. It stockpiles crushed rock. And it works in winter cleaning and shaping the highly-abrasive cement clinker storage pile.

We'll demonstrate for you

We'd welcome the opportunity to show *you* how a Michigan Tractor Dozer's versatility, power, speed—and dependability—can increase production on your job. There are four sizes to choose from: 162, 262, 380 and 600 hp. Call us, at your convenience, for a "no-obligation" demonstration *on your job.*

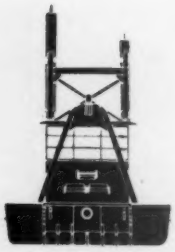
Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division
2479 Pipestone Road
Benton Harbor 4, Michigan
In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

CLARK® EQUIPMENT

COMMON PRODUCTION JOBS

At quarry, Michigan cleans around rock shovels. Unit reaches job, 15 miles from plant, by driving over truck haul roads at speeds up to 20 mph.

AT LONG LAST
A REAL
SAND & GRAVEL
DREDGE



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THE ALL NEW PORTABLE
SD-110

This amazing 10" dredge will dig anything but solid rock!
The most efficient dredge ever produced . . .
designed to give years of trouble-free service.
It's rugged and it's right!

EXCLUSIVE SD-110 FEATURES

- CONFORMS TO HIGHWAY LIMITATIONS
- GUARANTEED UNBREAKABLE CUTTER SHAFT
- EXTENDABLE HULL FOR WIDE SWEEPS
- 2 HOUR ASSEMBLY AND LAUNCHING
- INFINITELY VARIABLE SPEED CONTROL ON CUTTER AND SWING WINCHES
- EXCLUSIVE PATENTED HYDRAULIC CUTTERDRIVE
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- ONE MAN OPERATION

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PLANTS — Harrisburg, Pa. and Hallandale, Fla.

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Workboats, drillboats, floats, pipe, sleeves, and all dredge accessories.

OUTLETS — DMC products sold and serviced by distributor outlets throughout the world

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Enter 66 on card, page 177

Labor Developments

(*Continued from page* 13)

profit-sharing plan. There is more than a touch of irony in the fact that, for many years, profit sharing was an arrangement endorsed in highly placed management circles.

During those years, profit sharing was generally condemned by unions, and management proposals along these lines were generally turned down out of hand. Suddenly, the United Automobile Workers has "seen the light." But when a profit-sharing arrangement was agreed upon with American Motors, the other big automobile makers refused even to consider such plans.

The agreed upon profit-sharing plan goes into operation only after profits exceed 10 percent of American's net worth. Of the remaining profits, 10 percent is to be set aside for the benefit of the workers. This part will be used principally to finance improved fringe benefits, such as pensions. Another 5 percent of the remaining profits is to be paid to the workers in American Motors stock. In the early years of operation, this stock is to remain in a trust fund. The dividends it earns may, if necessary, also be used to finance the improved fringe benefits.

This profit-sharing arrangement carries with it all kinds of implications. First of all, it ties the financing of improved fringe benefits to the company's profitability. Presumably, if the profits are inadequate to accomplish this, the employees will have to pay for the improvements or they will be dropped. It remains to be seen whether this would actually happen.

At the same time, if American's business is profitable, the employees automatically become stockholders. With the passage of years, it is conceivable that the employees could become an important block of stockholders, one that might have to be reckoned with in the membership of the board of directors or in the making of management decisions.

If American Motors Corporation continues to be profitable, so that the union and the employees realize significant benefits out of the new profit-sharing arrangement, requests will be made for similar plans elsewhere, and perhaps granted.

(*Concluded on page* 71)

TRAYLOR FIRST

Biggest primary gyratory crusher in 1919 and now . . . big reason why it pays to plan with Traylor in the changing 60's

Industry seeking a crusher of capacity bigger-than-ever turned to Traylor and got it . . . 42 years ago. The 60-inch primary gyratory first built by Traylor then is still in operation—along with two others purchased since by the same customer. It is still the standard by which "big" crushers are measured.

Why so important now? One obvious reason is, no one has a longer record of experience in this special field.

Of even greater importance: It's one of many important demonstrations of Traylor's being first with new and better equipment to meet changing production needs. You'll find many other examples throughout the industry—very likely right in your own plant. Do you use an all-welded kiln . . . a large ball mill, larger copper converter? All these are Traylor "firsts," too. Traylor's proved capacity to pioneer sound innovations in kilns, mills and crushers is enhanced today by expanded research capabilities and process know-how.

An impressive record of historic "first" . . . plus what it takes to stay first for so many years . . . that's why it pays to call on Traylor first when you're planning plant improvements for bigger profits tomorrow.

See Pit & Quarry Handbook for details and specifications.

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EXPLOSIVES

At this Maryland quarry, Ammodyte,® a low-cost cartridged explosive, was used to obtain maximum fragmentation and displacement of this tough, blocky granite gneiss. In the large photo above, notice how the toe is sweeping clear, resulting from well planned bottom initiation with Rockmaster® millisecond delay electric blasting caps. The resulting muck pile is properly laid out for easy, efficient digging.

ENERGY...

Are you aware of the many ways it is cutting costs all along the line? . . . Boosting production? . . . Increasing life of heavy equipment? . . . Allowing more efficient use of total man-hours?

Cheaper blasting materials, new blasting techniques, and improved drilling equipment, have reduced the cost of explosives energy to the point where it is doing work formerly reserved for mechanical equipment. And doing it cheaper, faster, and more efficiently.

In the Maryland quarry shown here, achieving good breakage was a difficult problem. This granite gneiss is tough and blocky. And production demands couldn't wait for drop balling or a blocked crusher. Working with the Atlas Representative, these profit-minded operators modernized their blasting techniques.

By adjusting hole diameter, burden and spacing, and utilizing the wallop of low cost Ammodyte,® these operators are gaining breakage and displacement never achieved before. Production speeds have been increased because they have been able to dig shots quicker and easier and gain maximum crusher production. In the process, they are realizing real savings in maintenance and wear on crusher, dipper teeth, wire rope, and truck bodies.

In coal stripping, other alert, up-to-date operators are using explosives energy to accomplish new tasks. Explosives force is being used to move up to 50% of the overburden directly onto the spoil pile. Mechanical handling costs are reduced, coal is uncovered more rapidly.

In open pit ore mining, explosives factors are being designed to gain additional fragmentation. Much of the material by-passes the primary crusher. Production is speeded, overall costs lowered.

In construction, contractors are finding that explosives energy can save them unwelcome maintenance costs on valuable equipment, and accomplish work faster, more efficiently.

In these times of change, the economics of drilling and blasting have changed also. Looking for ways to reduce blasting costs alone is not enough. The real savings come when you look at explosives energy as a way to reduce overall operating costs.

For a closer look at some of the ways explosives energy can lower your costs, investigate Atlas' full line—the only full line of ammonium nitrate and explosives in the industry. Expanded plant facilities are now in production at Joplin, Mo. and Reynolds, Pa., to assure ready availability of all products. And to give you faster, more flexible local service, expanded distribution facilities are being established coast to coast.

Call in your Atlas Representative. His experience with the newest advances in explosives, blasting agents, and blasting techniques can help you measure the relative economy of explosives energy vs. mechanical energy for your particular operation. Ask him about it. Or write directly to:

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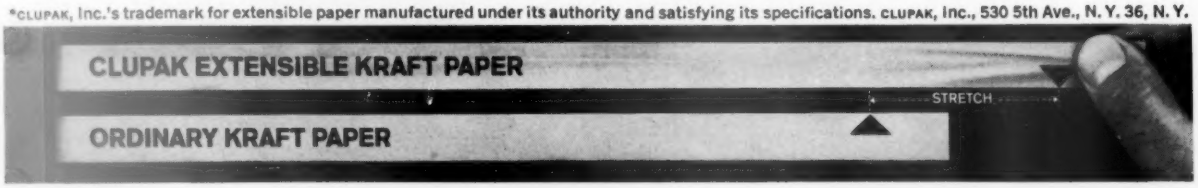

Labor Developments

(*Concluded from page 66*)

There is even a possibility that, as in the case of fringe benefits, these arrangements will become widespread. In this case, American workers for the first time, will have a direct interest in the profitability of American enterprise. Theoretically, this is an ideal state of affairs. It will be fascinating to watch this theory meet the test of actual experience.

Washington News Letter

(*Concluded from page 11*)

13 hours for miscellaneous construction crafts
9 hours for professional and managerial duties
1 hour for various clerical and service occupations.

Ten years earlier a similar study showed a figure of about 175 hours for on-site labor requirements. The prime cause of this large decline was the increasing use and efficiency of road-building equipment, particularly in grading and surfacing.

The 125 hours of off-site labor in the recent study included about:

35 hours for the mining and manufacturing of nonmetallic minerals and products
15 hours for rail, truck and inland water transportation
11 hours for the manufacture of fabricated metal products
9 hours in the manufacture of construction and mining machinery
10 hours in the production of iron and steel and forgings
7 hours in trade
5 hours in off-site work in the construction industry
3 hours in the manufacture of paper products
3 hours in wood products

The remaining 27 hours were used in a wide variety of activities.

An interesting sidelight of the report was its close comparison with a similar report on school construction. Here, $1,000 of construction expenditure used 212 man-hours, of which about 55 were on-site and 157 off-site.

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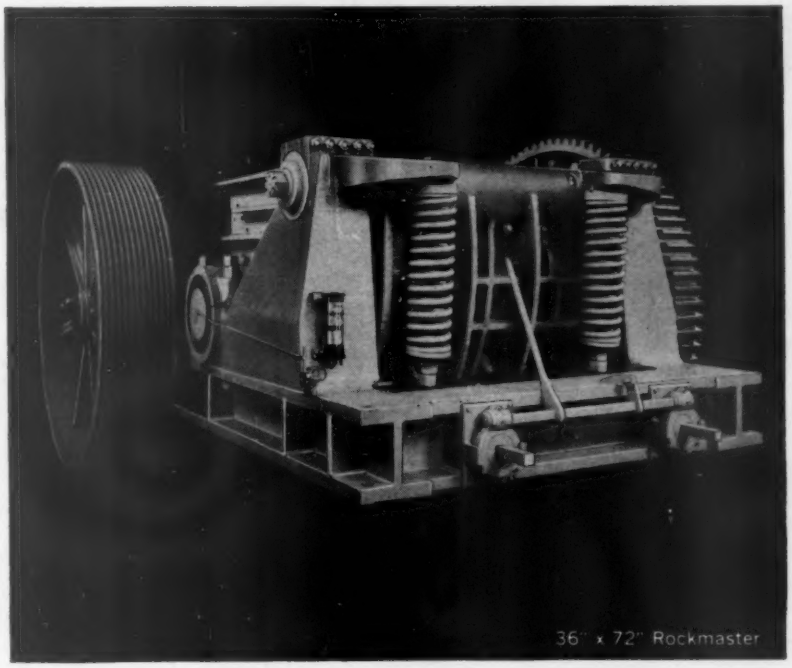

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PIT, MINE AND QUARRY EQUIPMENT HEADQUARTERS SINCE 1835

Enter 71 on card, page 177

Smidth

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The Smidth Cooler may also be used with many other similar dry pulverized materials.

Illustrated: Two 6′ 6″ diameter by 17′ 7″ high Smidth Coolers ready for shipment.

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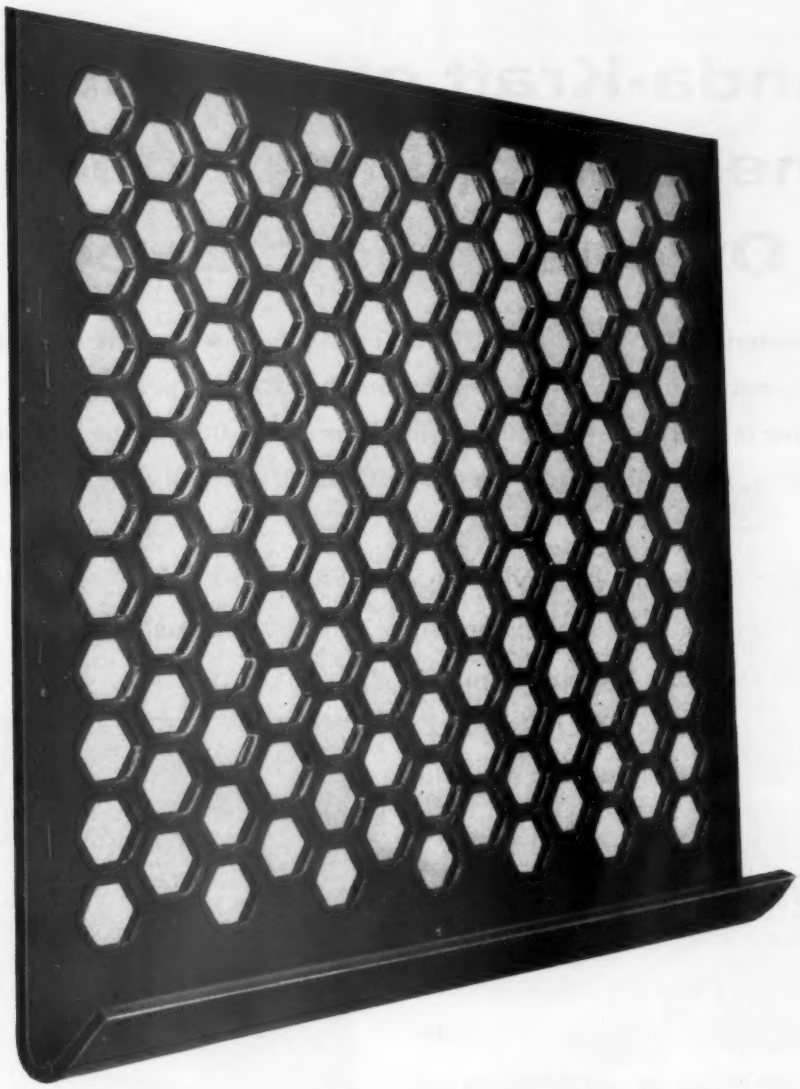

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Expanda-Kraft offers "strongest, toughest shipping protection" says Owens-Illinois Executive

"We can recommend Expanda-Kraft unhesitatingly whenever a customer asks for strong, tough, maximum shipping protection that can be provided for his product—no matter whether it be alfalfa or yeast, asphalt or zinc sulphate, or anything in between," says P. L. Chism, Plant Manager, Owens-Illinois' Multiwall Bag Division, Valdosta, Ga.

"In heavier bag weights, the Expanda-Kraft paper actually saves the customer money by reducing the total basis weight required, while furnishing more strength than can be available with comparable weights of standard flat kraft.

"Expanda-Kraft produces a sharp and clear printed image because of its low absorbency. Not only do we score an impressive bonus in appearance, thanks to Expanda-Kraft, but it also helps us cut down on ink and glue costs because of this lower absorbency," Mr. Chism reports.

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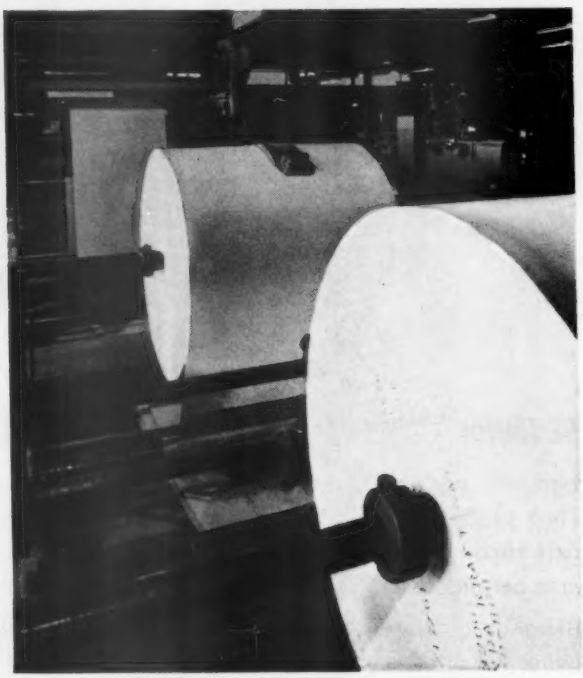

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- Setting can be changed instantaneously by finger-tip control without shutdown!
- And the new *KONE-O-MATIC's* feed opening is lower and larger, size for size, than any other crusher we know of!

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The Editor's Page

Cleaner Air Week

THE week of October 22 to 28 has been designated by Congress as Cleaner Air Week. During those seven days an intensive publicity campaign will direct the attention of millions of our citizens toward a grave national problem—air pollution. One of the Air Pollution Control Association's principal objectives in sponsoring such observance is to promote the public understanding and co-operation necessary in the community-wide approach to the control of one of our most serious health problems.

Reviewing the 13-year history of the Cleaner Air Week observance, Charles N. Howison, national chairman of the A.P.C.A. Committee in charge of this annual feature said:

"When the Air Pollution Control Association established the annual observance of Cleaner Air Week 13 years ago, there was set in motion a powerful force for conserving a national resource basic to health and to life itself. That force is an informed public opinion which is increasingly facing the fact that clean air is obtainable without sacrifice of essential industrial activity.

"As our cities and industries continue to grow, the task of preventing unpleasant and dangerous contamination of the air we breathe becomes at once more complex and more urgent. More must be learned about the causes and effects of air pollution and about the most effective measures for its control. And then this knowledge must be translated into action."

THE Air Pollution Control Association, with headquarters at Mellon Institute, Pittsburgh, Pa., is a public service organization of industrial and business firms, governmental organizations, and individuals. Membership is available to professional, technical, scientific, and other persons interested in helping to advance the knowledge and practice of air pollution control. It also sponsors an annual meeting at which air pollution control problems and solutions are discussed.

Cleaner Air Week is directed by a national committee, but local committees in scores of cities across the nation are the operating units of the campaign. These units are using every conceivable promotional means to arouse public interest in this problem; they have the co-operation of churches, schools, newspapers, magazines, radio and television stations, company house organs, and bulletins. Exhibits, movies, window displays, billboard posters, speakers, and other publicity means are also being used. This is all being done on the basis that cleaner air is everybody's business. All of us have a stake in air pollution and its control, and teamwork is necessary if it is to be overcome.

THE nonmetallic minerals industries are only minor contributors to air pollution, compared to many others. Pollution from their plants consists almost entirely of dust, with some combustion gases, forming more of a nuisance than a hazard. These become highly objectionable only if such an operation is located in or near a settled area, or if it is near certain other industries, special types of farming operations, etc. Such producers should, however, do everything possible to clean up their operations if for no other reason than to get the good will of their neighbors. A big step in this direction would be to participate actively in the observance of Cleaner Air Week in your community.

Walter E. Trauffer

By BUREN C. HEROD

New Haven Trap Rock Expands at North Branford

Connecticut operation improved in efficiency, product flexibility; capacity raised 100 percent with new crushing, screening plants

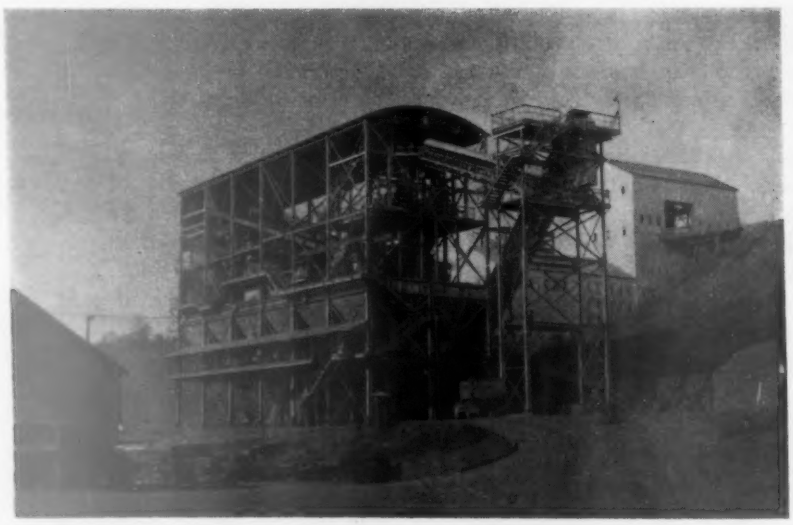
ANOTHER ON THE SPOT report

AN UNUSUAL—and factual—statement made in a public information pamphlet of the New Haven Trap Rock Company points out that the company's business started some 200 million years ago—at a time of geologic cataclysm when extensive volcanic action left immense sheets of trap rock through the Northeast. In two of these sheets, covering large sections of Connecticut, New Haven Trap has three crushed trap rock operations.

The intensive activity that surrounded the expansion and modernization project of recent years at the company's North Branford installation would probably compare quite effectively with the geologic upheaval in which its raw material supply originated. Although this program, which was initiated in 1957, involved but a second of time compared with the eons since this trap rock formation was created, its effect will be equally significant in terms of material extraction and processing.

Every phase of the operation from the quarry to loading was expanded and modernized in attaining the present 1,200 t.p.h. design production capacity. (That rate has actually been easily exceeded frequently.) Major factors include a new primary crushing installation—the first project undertaken, a scalping tower, surge pile provision, additional crushers, and a large screening plant. Complementing the impressive physical setup is the high degree of processing flexibility of the operation design, particularly in recrushing. The only elements remaining of the older 500-t.p.h. operation which the new facilities replace are one of the secondary crushers, two tertiary reduction units, and four screens.

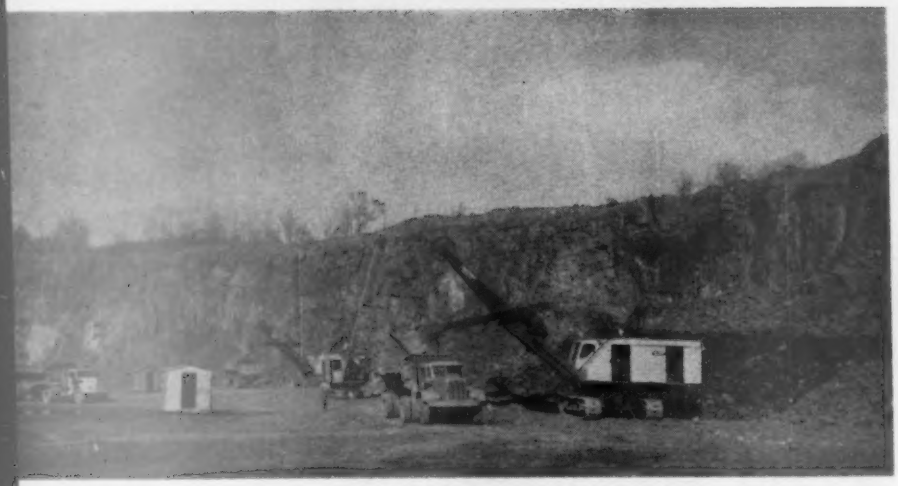
In carrying out the four-year expansion, it was found feasible to retain the older structure to house all of the recrushing and secondary



A VIEW OF THE NEW SCREENING PLANT from the input end. Stone from the scalping and secondary crushing circuits—all minus 2¼ in.—is transferred on the tower, center, to the feed conveyor entering the top of the plant. Ten screens are mounted above the six 500-ton load-out bins.

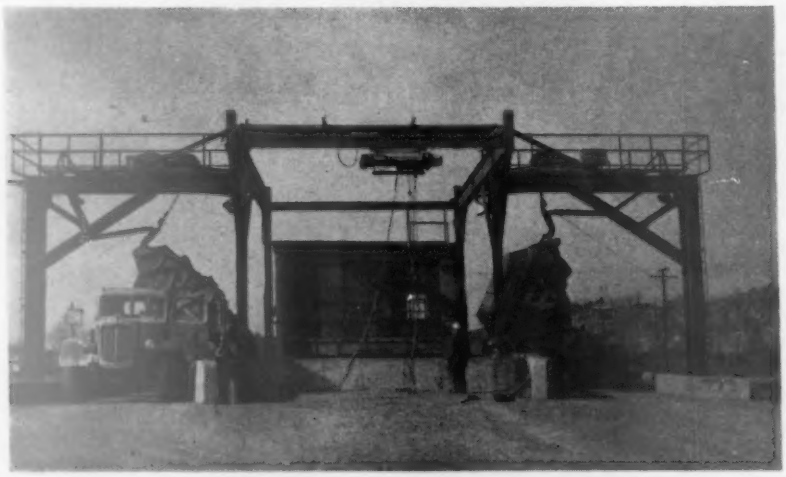
THE 1,200-T.P.H. DESIGN CAPACITY OF NEW HAVEN'S OUTSTANDING OPERATION at North Branford, has actually been frequently exceeded. In addition to the new screening plant, right, the new scalping and surge installation, left, and revision to secondary and tertiary crushing circuits housed in the center structure, a new primary crushing installation was made in the quarry floor. The quarry level is that seen behind the scalper tower and crushing house.

MAXIMUM SHIPPING FLEXIBILITY involves water, rail, and truck transport. This barge-loading terminal at Pine Orchard is supplied by the firm's own rail line—the Branford Steam Railroad. The latter also connects with a public rail carrier serving New England.



A QUARRY VIEW SHOWING two of the three shovels loading side-dump haulage units. The formation is prominently jointed, and breaks well in blasting.

THE QUARRY FACE, now about 7,000 ft. long, has an average height of 70 ft. and stands well, as seen, despite the extensive jointing. Far down the face the third quarry shovel is being operated.



AT THE PRIMARY CRUSHER, haulage units can dump from either side, and two at a time. Since the crusher is below the quarry floor, there are level approaches for the trucks

scalping operations. Aside from this crusher house, all other processing facilities are new. When the primary crushing installation was made, it was done by excavating in the quarry floor—which is above the plant site level—and the crusher was installed in the cut shown in an accompanying photo.

With this setup, quarry trucks have level approaches to the two dumping points. The new scalping tower was erected near the crusher house which, as shown, is built on the flank of the trap rock strata. On the opposite side of the crusher house from the scalping tower is the large new screen building—a structure nearly four stories high—housing a battery of 10 screens above a set of six 500-ton loading bins. Both truck and rail loading may be accommodated from these bins.

Standardization on many of the various items of equipment accompanied the design of the new installations. The majority of the conveyors are comprised of H-R components and are largely fitted with Maltese Cross belting. The large primary breaker is a 42-65 Superior gyratory. The other crushers include a 7-ft. standard cone, a 5½-ft. short head, and two 4-ft. short heads with fine bowls.

The majority of the 14 screens in the plant are H-R equipment. Most of these, and the new conveyor systems, are driven with totally enclosed, fan-cooled electric motors and, in the case of the conveyors, largely through enclosed speed-reducer units.

Processing stages incorporating the above equipment are laid out in such a manner that there is essentially a closed loop, starting with

the scalping phase, through secondary crushing, screening, tertiary (or recrushing), and back to screening. In addition to initiating recrushing from the bins below the final screens, a side flow of stockpiled materials may be introduced into that crushing circuit.

Quarry Appropriately, the outstanding new plant is supplied from a comparably impressive quarry operation. Since 1914, when the quarry was first opened into the trap rock ridge at the North Branford site, the area has been worked to the point where the present face, averaging 70 ft. in height, is about 7,000 ft. long. It stands well, although the rock is prominently jointed and breaks very well in blasting.

Drilling is done with a pair of 42T churn drills that sink 9⅝-in. holes. For a routine shot, about 28 holes are drilled on 26-ft. spacing and 30-ft. burden. These are charged with various blasting agents, including carbonized ammonium nitrate, and the shot initiated with E.B. caps and Primacord. Millisecond connectors are used between the holes, attached to the trunkline Primacord, giving an average of 17 ms. delay between holes. Yield is normally about 3 tons per pound of powder, including end and back break. Any necessary secondary breakage is done with a crane and drop ball.

Broken rock is loaded out from various points along the face by three machines—one 2½-cu. yd. electric shovel, and a pair of 2½-cu. yd. diesel shovels. Haulage is handled by a fleet of six units—three burden carriers and three tractor-trailer units, all equipped with side-dump bodies.

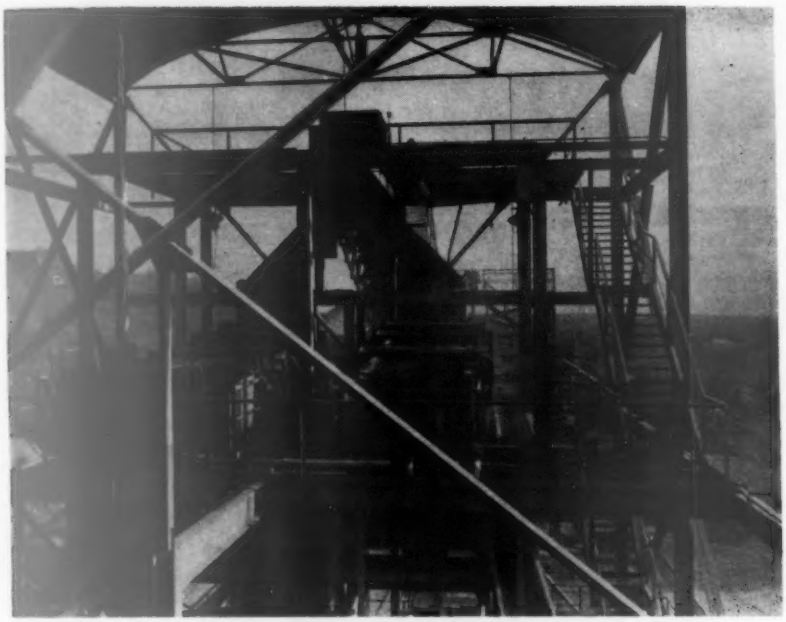
Primary At the primary crusher, rock may be dumped from either side—both points being provided with HE-20 Easton dumping systems. Jam-ups in the crusher hopper are cleared with a hook suspended from a 5-ton P&H Hevilift hoist on a single girder crane.

Equipped with a Hydroset system, and set for reduction to 4½ in., the primary crusher is driven by a 300-hp. A-C motor. It discharges to a 48-in. belt conveyor, 231 ft. o.c., which has a 50-hp.

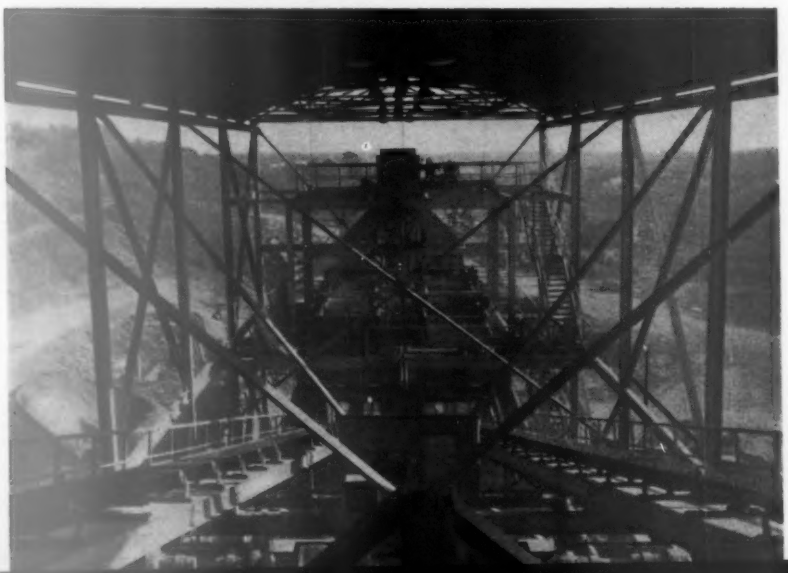
THE CUT in which the primary crusher installation was made. Rock reduced through the 4½-in. setting of the primary gyratory is carried on the conveyor, foreground, to the scalping tower.

TWO SCALPING SCREENS are installed on this tower. The conveyor at the upper left delivers plus 2¼-in. material to the surge pile. In the foreground is the stacking conveyor for stabilized base material.

SCALPING. One of the two 6- by 16-ft. double-deck scalping screens.



SCREENING PLANT FEED enters through the pants-leg chute, center, and is split to the first two screens. These are 6- by 20-ft. double-deck units, identically fitted with punched-plate screening surfaces.



THROUGHS from the first two screens, background, are carried on the parallel belts to the opposite end of the screening plant and delivered to a second finish screening phase.

drive, and rises about 29 ft. to the head pulley on the scalping tower.

Scalping Two 6- by 16-ft. double-deck Gyrex screens are installed on the scalping tower, one above the other. The top screen receives the primary crusher-run material, and makes a split at 2¼ in., with the plus 2¼-in. fraction passing to a 48-in. 50-hp. surge piling conveyor. When the plant feed is clean and dry, the minus 2¼-in. fraction is chuted, bypassing the lower scalper, to a conveyor and carried directly to the screen house. Otherwise, that fraction is placed on the lower scalper.

Material from either or both decks of the lower scalper may go to a stabilized base material stockpiling belt, or be delivered to the first unit of a conveyor system leading to the screening plant.

Plus 2¼-in. stone placed on the surge pile from the top scalper is reclaimed through a drawpoint in an underlying tunnel, and is transferred on a 48- by 60-in. F55DT Syntron feeder to a 48-in. belt. The latter, 175 ft. o.c., transports the feed into the crusher house.

Secondary Crushing All material ultimately reaching the screening plant is in the minus 2¼-in. range. Part of that flow has already been removed from the primary crusher-run in the scalping stage. The rest, or roughly two-thirds of the plant feed, is the product of secondary crushing. To handle the volume of material that must be reduced at this point, the secondary reduction circuits are comprised of a 7-ft. standard cone and a 5½-ft. short head in circuit with two screens.

The feed is first delivered to the 7-ft. crusher, which has a medium bowl, and is driven by a 250-hp. G-E motor. Reduction is made through a 1¼-in. setting, with the products discharging to a 36-in. belt for transfer to the first screen in the circuit.

This unit, a standard 6- by 16-ft.

double-deck Gyrex screen, scalps plus 2⅛-in. stone which is put back through another crushing pass, while the bottom deck throughs are put on a belt in the flow to the screen house. In the second crushing pass, stone from the above screen is conveyed to a discharge point where it may be sent to both the 5½-ft. short head, and the larger cone.

The former has a coarse bowl, and is set at ½ in. Drive is provided by a 250-hp. G-E motor. Discharge from this crusher is conveyed to a 4- by 8½-ft. single-deck Gyrex screen. Plus 1⅝-in. material is scalped off and returned to the conveyor carrying oversize from the first screen back to the secondary crushers. This closes the circuit in the secondary crushing stage.

Throughs from the second screen in the above system join those from the first on a 36-in. conveyor which is the initial unit in the system feeding the screening plant. This belt also receives the minus 2¼-in. stone from the scalping tower, and thus the entire flow of material under the desired top size limit has been gathered from three points.

Finish Screening The handling system supplying the screening phase is completed by two more 36-in. conveyors. The first, about 200 ft. o.c., and driven by a 100-hp. motor, discharges at a transfer tower to the final belt, 77 ft. o.c., that leads to the top of the screen building at one end.

Here the flow is split to a pair of 6- by 20-ft. double-deck Hi-G screens. These units are identically fitted with punched plate screening surfaces having 1⅝- and $^{15}/_{16}$-in. hexagonal openings on the top and bottom decks, respectively. Retained fractions on the related pairs of decks are chuted into the appropriate underlying 500-ton bin compartments of 1¼- and 2-in. material.

Each of these two screens discharges bottom-deck throughs to a following belt conveyor. These conveyors are parallel and identical units, with 24-in. belts, 124 ft. o.c. Each discharges to one of two pairs of screens at the opposite end of the screenhouse.

Each screen pair is comprised of a 5- by 16-ft. double-deck Seco, and a 5- by 14-ft. double-deck Ty-Rock.

THE PARALLEL BELTS rise to the second screening phase, upper background, which incorporates four double-deck screens in two pairs. Below the control booth, center, are the four final screens handling the finest fractions.

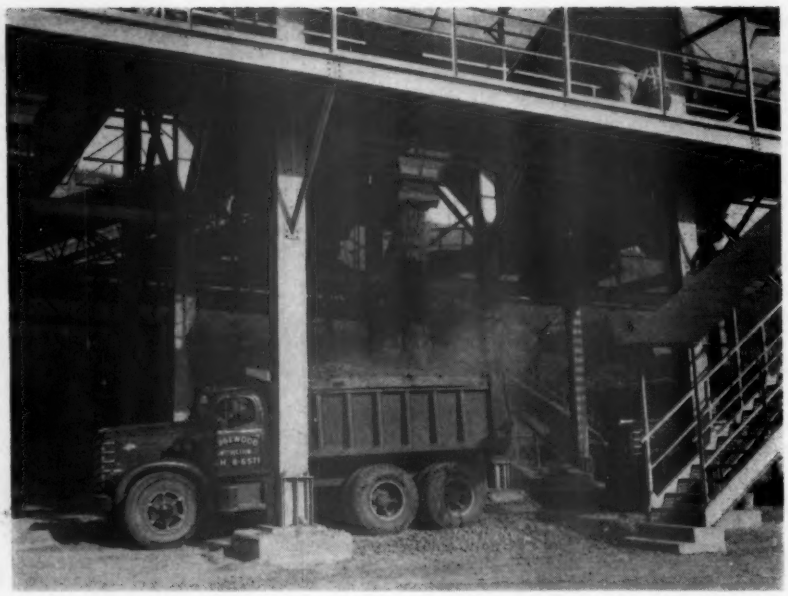
Below:
THESE FOUR SCREENS, located above the two central load-out bins (see text), handle the final sizing in the screening plant. They are supplied with throughs from the four screens in the second screening phase.

These four units were retained from the former plant. All are fitted with punched plate screening surfaces—the four bottom decks having $^{9}/_{16}$- and $^{7}/_{16}$-in. hex openings, and the top decks ⅝- and $^{9}/_{16}$-in. perforations.

Retained fractions may be chuted individually to the appropriate bin compartments for the ¾- and ½-in. aggregate, or they may be placed together as a mixed product. Bottom deck throughs from each of the above screens are placed on individual 18-in. by 44-ft. belt conveyors and transported to another set of four screens mounted above the central two of the six bins.

All of these four final screens are single-deck 6- by 16-ft. Vibrex units, also fitted with punched plate screening; they make a separation with ⅛- by ½-in. side-staggered slots. Products of this separation are chuted into the ⅜-in. and screenings bins.

Recrushing A high degree of operating efficiency in maximum production of the smaller



EACH LOAD-OUT BIN has two air-actuated gates, one above each of the two drive-throughs. Both of the latter will accommodate trucks and rail equipment.

sizes was incorporated in the layout of the recrushing (tertiary) reduction system. To feed this system, reclaiming and transfer conveyors were installed below the two bins at each end of the screen house to draw any of the four larger fractions. These four belts discharge to a gathering conveyor on which the materials are transported to the tertiary crushers in the crusher house.

This feed is split to the two 4-ft. short heads, which have fine bowls and are set at $\frac{3}{16}$ in. Both are driven by 150-hp. G-E motors. Products of this reduction are then placed on the same belt with the minus 2¼-in. material obtained from the secondary crushing circuit, and from the scalping phase, and are returned to the screen house on the conveyor system described previously.

The design permits using any single one of the four largest fractions in the screen house bins to supply the recrushing circuit, or combining any two or more, up to a total of about 325 t.p.h.

In addition to transferring the larger fractions from the screen house bins, material entering the recrushing circuit may also be drawn from a surge pile installation. The latter is comprised of a reclaiming tunnel used with the former plant. The larger fractions are trucked to this surge from the screen house bins or stockpiles. Material is recovered from the tunnel's drawpoints with jigging gate feeders, and is conveyed to the gathering belt that also receives stone from the bin conveyors below the screen house bins.

Loadout, Shipment Two Blaw-Knox bin gates, actuated by Hanna air cylinders, are installed under each of the six bins, permitting loading from any bin into both of the underlying drive-throughs at the same time. Both drive-throughs will accommodate rail or truck units.

The company owns and operates its own railroad—a 6.2-mile-long standard gauge system known as the Branford Steam Railroad—and through connection with the New Haven Railroad, can supply customers by rail throughout New England. In addition, the firm's rail system, which runs from North Branford to Pine Orchard, supplies a terminal at the latter point where deck barges are loaded for water shipment to Long Island, New York, and New Jersey points.

With this flexibility of shipment, backed up by a highly efficient, high-capacity processing plant having maximum product flexibility, New Haven Trap Rock has reached a new high potential—one that should extend appreciably its already impressive half-century of service.

Officials Operations at North Branford are headed by R. D. Brewer, superintendent. C. W. Hutton, chief engineer, was also one of the key personnel involved in the design and construction of the new installation. Top management, headquartered in New Haven, includes R. J. Reigeluth, chairman of the board; A. L. Worthen, vice-chairman; R. S. Reigeluth, president; E. T. Perry, vice-president, sales; T. W. Jones, vice-president, production; and L. E. Hintz, secretary-treasurer.

Formal Opening Held At Lane Mountain Silica Co.

Completion of construction on the Lane Mountain Silica Company plant at Valley, Wash., was marked by an open house.

The dedication was attended by a group of stockholders and officials of Del Monte Properties Company and Northwestern Glass Company. These two firms are the principal owners, and Del Monte is the operating company.

Plant capacity is 350 t.p.d. when in full operation. Valley Mining and Quarry Company, operating three trucks and trailers, handles ore hauling from the quarry at Lane Mountain, 10 miles west of Valley.

Don Allen is manager, assisted by his brother, Robert. George Hellerich is plant engineer, and Charles Smith is superintendent.

Southwestern Gypsum Company Formed in Oklahoma

Southwestern Gypsum Company, Inc., a newly incorporated firm in Oklahoma, has announced a panel of officers.

Ed Berrong, state senator, has been elected president and a director. Ed Tippens is vice-president, and Harvey Richert is secretary-treasurer. The firm's 100 shareholders have a total of $100,000 invested. All stock authorized to be sold has been purchased.

By BUREN C. HEROD

◆Two-day conference sparked by intensive floor discussions

N.S.G.A.-N.R.M.C.A. controllers exchange pointers on procedures

THE men charged with the responsibility of analyzing financial affairs of sand and gravel firms and of ready-mixed concrete companies are conditioned to acute awareness of income and cost factors affecting their businesses. They apparently feel that a prime method of maintaining that acuity is participation in the annual controllers conference of the National Sand and Gravel and National Ready-Mixed Concrete associations.

Registration at the latest conference, held August 10 and 11 at the Edgewater Beach Hotel, Chicago, Ill., included industry representatives from coast to coast, and Puerto Rico. Increasing annual attendance since the first conference a few years ago testifies to the caliber of a meeting that will draw these controllers at the height of the industries' operating season.

The two-day meeting, headed by Henry H. Kirwin (Eastern Rock Products, Utica, N. Y.), chairman of the associations' joint committee on fiscal policies, was built primarily around a schedule of open forum discussions of most of the financial aspects of the industries. Coupled with these were talks by guests who are authoritative representatives of the investment and banking fields.

Sparked by initial discussions of scheduled speakers, the open-forum comments and exchange of ideas, plus question-and-answer sessions, were major elements of the highly effective sessions.

Subject matter ranged from preparation of financial statements, cash flow forecasts, and maintenance cost records to determining and evaluating aggregate inventories. Rounding out the agenda were talks on investment of surplus funds, and the potential for the borrowing future.

Financial Statements Communication with the reader—in terms of accounting data—is the basic objective in formulation of financial statements, according to J. R. Spear (The Dolese Company, Oklahoma City, Okla.). Mr. Spear led a discussion on format, preparation, use, frequency, and other aspects of financial statements.

In Mr. Spear's organization, financial and operating reports are prepared for the firm's key personnel and staff, but they are always in a shape suitable for submittal to auditing, banking, governmental, or similar groups. Many weekly and daily reports are prepared to keep management consistently informed during the gap between the close of a regular accounting period and the receipt of complete statements.

Cost reports should be distributed right down to the lowest level of cost control in a company, Mr. Spear stated. This assignment of responsibility for cost elements at various levels — particularly the lower ones — makes supervisory personnel more cost conscious, sets standards, and has the psychological effect of creating the feeling of "belonging." Further, with such comparative reports on cost centers, supervisors can readily see how their efforts measure up.

Readability is paramount in establishing the form and content of statements, Mr. Spear emphasized. Also, simplicity, the minimum of technical detail, and even the use of rounded-off figures are quite beneficial.

Henry H. Kirwin (Eastern Rock Products, Utica, N. Y.), chairman of the associations' joint committee on fiscal policies, whose efforts have contributed materially to the growing interest in and success of the controllers conference.

How much detail is indicated? Only to the extent that it is warranted by the interest and applicability of a cost element or elements, and that people in the organization can and will use the information.

Preprinted forms with all necessary headings except plant names are used in the preparation of financial statements and reports by Mr. Spear's staff. Unit costs are calculated and become details of reports typed on another preprinted form. Multiliths are then made from these master file copies, for distribution.

Charting is a quick way of putting

across financial data, Mr. Spear pointed out. Charts can do a simple and effective job of showing correlations between various financial elements. Among the factors pictured by bar or line charts in the Dolese organization are cash, sales, net profit, and return on investment.

Once the mechanics of closing the books for a given accounting period have been completed, Mr. Spear suggests that accounting personnel make analyses for presentation to department heads, supervisors, etc. Trends can thus be easily spotted, and ratios can be established, *i.e.*, profit to sales, assets to liabilities, operating expense to sales, net income to capital, net profit to total assets, etc.

Floor discussion following Mr. Spear's talk included the suggestion that a schedule and deadline be established for the preparation of particular accounting elements by the persons concerned with the various phases. Also, discretion is indicated in the distribution of full P&L data to company personnel.

Public Underwriting Although most firms in the sand and gravel and ready-mix industries are not publicly owned, the present market is favorable for public underwriting, according to John W. Stodder of A. G. Becker & Company, investment bankers.

Kenneth Tobin, associate managing director N.S.G.A.-N.R.M.C.A., who worked with Mr. Kirwin, in arranging the highly informative discussions of the conferences

"Selectivity will increasingly be the keynote for banks with respect to loan applications. Marginal borrowers will have more difficulty in arranging loans; qualified borrowers will still be readily accommodated by the banking system."

Why should firms in these industries consider such a move? Present private owners, Mr. Stodder stated, could obtain additional capital, could well benefit in certain tax areas, particularly estate tax; and there is also the factor of enhancing the apparent standard of value of the company.

Stock sales furnish capital for financing expansion, reducing obligations, and strengthening the borrowing power. Further, the groundwork is laid for management incentive, and is helpful in the negotiations for acquisition of or merger with another operation.

How is public underwriting initiated? An investment banking group can lay out an underwriting program. Subsequently, a firm's legal counsel and accountants will work up the necessary registration statement and prospectus for the S.E.C.

Criteria of value for possible underwriting of a new stock setup include the potential of the market served by the organization planning the stock issue, the potential of the firm itself to serve that market, and the firm's financial aspect.

Acquisitions and mergers have become commonplace, Mr. Stodder indicated, among both privately and publicly owned companies. Such steps generally stem from the desire for diversification, from probable attainment of a better financing position, or from the objective of sharing overhead. Cash purchase, down payment and work-out (which permits a lower initial investment), and tax-free stock exchange have been the primary methods of carrying out acquisitions and mergers.

Short term Investing Surplus funds accumulated seasonally due to the nature of operations of these two industries can be advantageously placed in short-term investments, according to L. E. Frankenthal, also of A. G. Becker & Co. Contrary to possible expectation, savings and loan groups are not the most effective lines for short-term investment. There is not sufficient flexibility, and six months or more are needed to realize a return on the investment.

U. S. Treasury bills, however, are good items, with both 90-day and 180-day bills available. Naturally the state of the economy affects the money market, and the Treasury bills are readily available in an active market. They represent the largest factor in the short-term investment field.

Yields were described as generally good from issues of the Federal Reserve bank, and the Federal Mortgage Association, but one drawback is lesser availability.

Borrowing Outlook Clifford S. Nelson, vice-president of the Continental Illinois National Bank and Trust Company of Chicago, pointed out that the deficiency in the federal budget will put more pressure on the investment dollar.

Selectivity will increasingly be the keynote for banks with respect to loan applications. Marginal borrowers will have more difficulty in arranging loans; qualified borrowers will still be readily accommodated by the banking system.

Getting right into the back yard of his controller audience, Mr. Nelson pointed out that bank officials like a good independent accounting report—well certified—when discussing banking transactions with their accounts or prospective accounts. Borrowers should maintain close liaison with their bankers, Mr. Nelson noted, since experience of

"Control of maintenance costs in the face of low unit product value is a major problem for the industries. Further complicating the problem is the fact that maintenance can amount to as much as 30 percent of total operating costs."

bankers in many businesses and with many operations can frequently forestall financial difficulties. Mortality is presently higher in construction, he added, than in general business.

Cash Flow Forecasts Norman Anderton (Vulcan Materials Company, Birmingham, Ala.) indicated that cash is a firm's most important asset. Due to some seasonal characteristics of the industries, there can be a summer drain on cash unless plans have been laid to comprehend that problem.

Although Vulcan's divisions are highly decentralized, cash management is headquartered in the corporate office. The program involves capital and operating budgets for disbursements and receipts. Such budgeting serves as a planning device for short-term financial dealings in taking advantage of seasonal cash surplus, and conversely, slowing up a drain on cash during other periods.

Washington Developments A number of significant observations were made by Vincent P. Ahearn (managing director, N.S.G.A. and N.R.M.C.A.) on current tax developments in Washington.

The Treasury Department, through Secretary Dillon, who is described as quite influential in the President's Cabinet, apparently feels that considerable revenue is being missed by not having a withholding tax on dividend and interest income. Congress may buy the proposition, it was noted.

Expense accounts seem to be a thorn to many of the legislators on Capitol Hill who are concerned with tax legislation. They probably will go for any reform in this area proposed by the President's counselors. Bipartisan support is expected for control of expense account deductions.

The proposed 8 percent tax credit for equipment expenditures faces trouble, Mr. Ahearn pointed out. Support from business, and on the Hill, has been lacking. However, it may well pass if the Administration really concentrates on its inclusion in tax law.

Depreciation and depletion may have a bad time next year, Mr. Ahearn predicted. With respect to the latter, mining processes will be critical points.

A rise in individual and corporate tax rates is a distinct possibility next year, according to Mr. Ahearn. These rates will probably be raised in order to offset budget deficiencies.

With respect to the Highway Revenue Act, it was pointed out that this bill is indicative of the results that can be attained when a strong unified voice is raised by the industries. Congressmen, it was emphasized, are available to businessmen.

The highway program faces problems in the near future, Mr. Ahearn said, due primarily to such factors as rising construction and land acquisition costs. A deficit in the Trust Fund is expected in a few years.

Mr. Ahearn observed further that continuation of the present government fiscal policy, foreign aid, domestic spending, etc., will inevitably lead to higher cost of living in this country. We cannot have either personal or state sovereignty, he added, and still be wards of the Federal Government.

Budgeting, Forecasting Methods and schedules for forecasting and budgeting several financial factors including sales, operating, delivery expense, etc., were detailed and illustrated by A. J. Selzer (Concrete Supply Co., Charlotte, N. C.).

Company personnel find the schedules prepared by Mr. Selzer's staff quite helpful in watching trends within their departments. However, distribution of detailed profit figures is confined to the top echelon of management.

The sample schedules displayed by Mr. Selzer included for each category the forecast for a given period, the actual experience of that period, and the figures for the corresponding period of the previous year. This applied, for example, to a master sheet covering sales of concrete (cu. yd.), selling expenses, and net profit before profit sharing and taxes. This master schedule is built up with monthly figures. Concrete sales forecast, actual sales, and previous year data included cubic yardage, dollar amounts, and average unit sales price. In the case of selling expenses, the amount and average were shown for the budget, actual expense, and previous year's results. The forecast, actual return, and previous year's experience in net profit were also shown in amounts and averages by month.

A similar type of worksheet schedule, with monthly figures, is prepared for each department, showing the more detailed cost elements applicable to the individual phases. Comparison of actual expenses with budgeted amounts is also made by department, and the data is compiled on quarterly forms.

Naturally, accurate forecasting and budgeting must be based on local markets, and to this end Mr. Selzer's group works up long-range projections comprehending industrial and residential construction. In this effort, the dollar amount of local building permits is a good indicator, Mr. Selzer stated.

As a help in sales forecasting, a monthly record of cubic yards sold and the forecasted amount is maintained. The actual amount sold is also shown as a percentage of the total.

A monthly cash flow summary, showing receipts, beginning of month balance, cash disbursements, and end-of-month balance, is closely correlated to sales forecasting and budgeting.

(*Concluded on page* 91)

By WALTER E. TRAUFFER

- PUBLIC RELATIONS
- TAX MATTERS
- SAFETY
- RESEARCH
- 1962 CONVENTION
- and EXHIBITS

discussed at White Springs during

N.S.G.A. DIRECTORS MEETING

THE boards of directors of the National Sand and Gravel Association and the National Ready Mixed Concrete Association held their joint semi-annual meetings August 22, 23 and 24, 1961, at The Greenbrier, White Sulphur Springs, W. Va. These were preceded on Monday, August 21, by executive and other committee meetings. As usual, there were separate meetings of the boards, followed by a joint meeting at which mutual problems were discussed and joint action taken.

In addition to the routine business reports, which showed that the association is in excellent condition financially and otherwise, and that its research, safety, and other programs are progressing satisfactorily, attention was given to many other important matters affecting the association and the sand and gravel industry. Among these subjects were: legislation; tax matters, including percentage depletion; zoning; public relations; fiscal policies; the recent controllers conference; insurance and retirement plans; public land law; proposed management seminars; sales agreements; and the report of the Manufacturers Division. Subjects discussed at the joint meeting included plans for the coming conventions and the machinery exhibit in Chicago, plans for future conventions and board meetings, mobile radio, etc.

The N.S.G.A. board meeting was presided over by President Edward K. Davison (J. K. Davison & Bro.), who briefly discussed the important developments affecting the industry and association since the January, 1961, convention in Miami Beach. Vincent P. Ahearn, managing director, gave the financial report for the first half of the year, and Harold E. Bender (Azusa Rock & Sand Co.), secretary-treasurer, gave the audit report for 1960. A brief report on the activities of the Manufacturers Division of N.S.G.A. was given by its chairman, Harry F. Lawrence (W. S. Tyler Co.).

1962 Convention It was evident from the advance information presented that the 1962 joint N.S.G.A.-N.R.M.C.A. Conventions and Biennial Exhibit will far outshine any previous meeting. This event will be held February 5 to 9 at the Conrad Hilton Hotel and the McCormick Place Exposition Center. Attendance is expected to exceed the all-time record set at the 1960 gathering, and the show will be by far the biggest ever scheduled. Over 125 exhibitors have already signed up for 80,000

Officers and members of the executive committee of N.S.G.A. include (left to right): Harold E. Bender, secretary-treasurer (Azusa Rock & Sand Co., Azusa, Calif.); Cecil G. Cooley (Cooley Gravel Co., Denver, Colo.); Edward K. Davison, president (J. K. Davison & Bro., Pittsburgh, Pa.); Fred P. Curtis, vice-president (Lyman-Richey Sand & Gravel Corp., Omaha, Nebr.); and Charles M. Everhart (Cumberland River Sand & Gravel Co., Nashville, Tenn.).

At the head table during the N.S.G.A. directors meeting (left to right): Mrs. Nan T. Cavey; Kenneth E. Tobin Jr., associate managing director; Vincent P. Ahearn, managing director; Edward K. Davison, president; John T. Sapienza, association counsel; Robert Mitchell, chairman of the committee on taxation; and Stanton Walker, director of engineering.

sq. ft. of booth space of the 96,000 net sq. ft. (150,000 gross) available. According to Kenneth E. Tobin Jr., associate managing director, more space can be made available if needed. Ample hotel accommodations will also be available for those attending. A total of 2,200 rooms have been reserved at the Conrad Hilton and 450 at the Pick Congress. Several smaller good, but lower-priced hotels are also being lined up, partly to encourage producers to bring more of their operating personnel.

According to Vincent P. Ahearn, managing director, an outstanding program is being developed. The speaker for the joint luncheon will be an important national figure. The business program will, as usual, cover a wide variety of subjects of vital interest to members and to the industry in general.

Some of the committees, and the Exhibit Division of N.R.M.C.A. will meet on Saturday, February 3. On Sunday the Manufacturers Division of N.S.G.A., the executive committees of both associations, and other committees will meet. All of these meetings will be held in the Conrad Hilton Hotel.

On Monday, February 5, the exhibits at McCormick Place will be opened, and the board of directors meetings and joint luncheon will be held there, as will all subsequent meetings through Thursday.

On Tuesday morning there will be general sessions, with the afternoon open for the show. Featured will be the inauguration of the newly-elected officers and the presentation of the safety trophies.

On Wednesday there will be general sessions in the morning, followed by the Joint Luncheon. The afternoon will again be open.

On Thursday there will be general sessions all day, but the show will close at 1:00 p.m.

On Friday there will be more meetings at the Hilton, probably up to 1:00 p.m.

There will be only one place for registration, McCormick Place. There will be no registration fees for non-member producers and users. Ample transportation from the Hilton to McCormick Place will be provided, since buses will be running every 10 minutes all day. The dining rooms, cafeterias, and bars there are adequate in capacity, with prices for every purse.

Coming Meetings The 1963 joint conventions, without exhibits, will be held February 11 to 14 at the Fairmont Hotel, San Francisco. In 1964 the 1962 procedures will again be followed, with meetings and show at the Conrad Hilton Hotel and McCormick Place, from February 24 to 28. The 1965 joint conventions had been tentatively set for the Americana Hotel, Miami Beach, Fla., and plans have been confirmed for January 25 to 28. Invitations have been extended to hold the 1967 conventions in Las Vegas or Los Angeles, a decision will be made by February.

The 1962 semiannual directors meetings are scheduled for The Broadmoor, Colorado Springs, Colo., September 30 to October 4, but an effort will be made to hold them earlier, so that school-age chidren can accompany their parents. For the same reason, the 1963 meetings, tentatively scheduled for Bermuda at about the same dates, will be moved ahead to late July. The location for the 1964 directors meetings has not yet been decided. Puerto Rican members present extended an invitation to hold the 1965 directors meetings at the new Americana Hotel in San Juan and it was accepted. Late September or early October was recommended.

Controller Conference In the absence of Henry H. Kirwin, chairman, the report on the recent third annual Controllers Conference and of the joint committee on fiscal policies was given by Mr. Tobin. (See the complete report on this conference elsewhere in this issue.) It was decided to hold another conference in 1962, again in August, at the Edgewater Beach Hotel, Chicago, with two full days of general sessions plus a half-day for committee meetings. A study committee on electronic data processing was also authorized by the board.

Public Relations In his report for the committee on public relations, Vincent P. Ahearn Jr. of the N.S.G.A. staff

A candid camera shot of the N.S.G.A. board of directors at work.

described developments to date in the zoning case of the *Town of Hempstead* v. *Herbert W. Goldblatt and Builders Sand and Gravel Corp.* This case is now pending before the U. S. Supreme Court and will be heard in the October term. Mr. Goldblatt is appealing from a decision of the Court of Appeals of the State of New York upholding the enforcement of a zoning ordinance of the Town of Hempstead, L. I., against his sand and gravel operations.

In 1927 Mr. Goldblatt's father bought some farm land and began the excavation of sand and gravel from it. The area became heavily populated, and in 1930 it was zoned residential. In 1945 the Town of Hempstead enacted an ordinance which required the erection of a high 7,000-ft. fence around the property. In 1956 an injuctioin was sought on the basis that the operation violated Hempstead's zoning ordinance, but this was refused by the Supreme Court of Nassau County, N. Y., which held that Mr. Goldblatt's operation was a pre-existing non-conforming use.

In 1958 the zoning ordinance was amended, prohibiting all excavation below the water line and requiring the sealing in of excavations previously made. The cost of refilling the excavation would cost Mr. Goldblatt more than $1 million, and penalties were imposed for failure to conform. The lower court decided in favor of Hempstead, and in a close decision this was upheld by the New York Court of Appeals. Because of the vital nature of this case, N.S.G.A. would like to participate if it is permitted to do so.

The association, said Mr. Ahearn, is actively opposing a proposed New Jersey zoning law which would restrict the use of the non-conforming doctrine. It is also co-operating with the American Society of Planning Officials in revising its gravel planning ordinance. Mr. Ahearn also described Federal Water Pollution Control Act amendments of 1961.

Public Lands Problem Since the meeting a year ago there has been little change in the problem Public Law 167 presents for producers in several Western states, according to James R. Henderson (Las Vegas Building Materials, Inc.). The Federal Government owns most of the land in the West (80 percent in Nevada), and these were opened up in 1866 for mining and exploration. The Act of 1955 (No. 167) created the problem when it provided that a deposit of "common varieties" of sand, stone, gravel, pumice, pumicite, or cinders is not a valuable mineral deposit and cannot be located and removed under the general mining laws, unless "the deposit has some property giving it distinct and special value."

In southern Nevada, Mr. Henderson stated, this is a particularly serious problem as concrete aggregates are scarce, and the area is growing rapidly. At the last meeting the board voted to make an effort to have the term "common varieties" defined by Congress and to have special consideration given to concrete aggregates. Some preliminary steps were taken, and at this meeting it was decided to have a western committee obtain the facts and draw up recommendations to be put before the board at the February meeting.

Percentage Depletion John T. Sapienza (Covington & Burling), tax counsel for N.S.G.A., reported briefly on percentage depletion developments. There are two bills before Congress, H.R. 7057 and H.R. 7058. One of these would freeze the open years to 1955; it is of little interest to pro-

ducers and is likely to pass. The other bill would raise the percentage depletion rate for sand and gravel, but there will probably be no action on it at this session. The President's proposal for modification of federal tax laws is really a massive revision, including percentage depletion, especially for the oil and gas industries.

Safety The report of the joint committee on safety was given by Chairman George W. Garrett (Stewart Sand & Material Co.). He reported that good progress is being made on the new safety manual. Mr. Garrett stressed the importance of more attention to the personal angle if the safety picture is to be improved materially, quoting the editorial in the August, 1961, issue of PIT AND QUARRY on this subject.

Mobile Radio The report of the joint committee on mobile radio by Chairman William J. Hicklin Jr. (Capitol Concrete Co.), and Kenneth E. Tobin Jr., stressed the progress being made on the new radio operating manual. This publication is expected to be ready early in 1962.

Engineering Matters The status of current laboratory research was described by Delmar L. Bloem, associate director of engineering. The effect of the size of aggregates on the properties of concrete has been a controversial subject. A recent comparison of aggregates from 56 sources all over the country is being evaluated. Preliminary indications show no advantages for larger sizes and many for the smaller sizes. Final results will be ready for the annual meeting in Chicago. Work being done on the utilization of high-chert gravels indicates that the smaller sizes seem to be more resistant to freezing and thawing.

Other Actions The question of whether or not management seminars should be sponsored by the two associations was discussed by Vincent P. Ahearn. Questionnaires sent out to members of both groups indicated that the majority would be interested but that many conflicting ideas on the subject would have to be resolved. The N.S.G.A. board voted in favor of a joint committee to study this subject.

A recommendation that the association institute negotiations with the National Council on Compensation Insurance on the multiplicity of codes applying to sand and gravel production, and transportation in navigable waterways, was withdrawn.

It was decided to appoint a committee to study whether or not to bring up-to-date the association's publication, *Standard Clauses for Sales Agreements in the Sand and Gravel Industry*.

N.S.G.A. Controllers

(*Concluded from page* 87)

Aggregate Inventories Taking inventory of aggregates is a mechanical procedure, stated W. F. Bayne (Union Sand and Gravel Co., Spokane, Wash.); and the best means available, whether simple or complex, should be employed.

Should a finished product inventory be evaluated? Most producers do in some way, Mr. Bayne said. He added that if no value is assigned, financial reports are conservative by that amount. True, personal property tax would be lower, and there would be no problem of measuring and over-estimating.

However, inventory evaluation could show a greater net worth on the balance sheet, and it would also show a more accurate cost of sales. Inventory, Mr. Bayne emphasized, is a firm's only salable material—and it must be considered in that light.

Maintenance Cost Data Control of maintenance costs in the face of low unit product value is a major problem for the industries, according to W. L. Werner (Houdaille Industries, Inc., Buffalo, N. Y.). Further complicating the problem is the fact that maintenance can be as much as 30 percent of total operating costs.

As long as equipment is in one place, Mr. Werner stated, maintenance is part of an intimate over-all relationship. However, the complexity of equipment operation today suggests detailed maintenance control cost data. Multiplant companies, he added, find this to be mandatory. Even the small operator with no shop of his own will find use records and maintenance records highly beneficial in holding the line on costs.

Lower maintenance costs can be materially aided by standardization, Mr. Werner said. Even with this help, cost data must be accurately collected in order to compile a trustworthy record of cost experience.

Six major points were presented in summary of maintenance cost determination and control—(1) a good preventive maintenance program is necessary; (2) personal responsibility and pride should be instilled in the custodian of each unit of equipment; (3) the prompt reporting of equipment defects should be encouraged; (4) standardization on makes and types of equipment should be a goal; (5) adequate cost accounting techniques should be followed; (6) a good maintenance squad should be organized—and retained.

Joint Committee The joint N.S.G.A.—N.R.M.C.A. committee on fiscal policies held a meeting on the morning preceding the opening session of the controllers conference. Among the many items on the agenda were discussion of public policy, industry planning and market forecasting, legal and tax research, screening of the fiscal handbook, and expansion of the cost accounting manuals.

In view of the enthusiastic participation in the controllers conference, the meetings of that group will be expanded next year to cover two full days. The important meeting of the joint committee will then be scheduled immediately prior to (or following) that of the controllers.

It was agreed that the conference next year will again be held in Chicago at the Edgewater Beach Hotel, and will be scheduled in August. The dates will be announced later.

FALK INTRODUCES 2 NEW SERIES OF VERSATILE SPEED REDUCERS

Designed to serve industry's current and future requirements

Type YB
Right Angle Horizontal
(write for Bulletin 2100)

Type Y Parallel Shaft
(write for Bulletin 1100)

Parallel Shaft and Right Angle Horizontal Reducers cataloged thru 1,570,000 lb-in. torque at low speed shaft ...larger units upon request. Ratios 1.84 thru 292 to 1 for parallel shaft; 5.06 thru 1207 to 1 for right angle horizontal

These new units are probably the most thoroughly engineered speed reducers on the market today. Final designs based upon years of development study and a background of 50 years experience make these units as dependable as the name "FALK". A few of their many features are...

PINPOINT APPLICATION COVERAGE Wide choice of sizes and ratios permits the most economical selection of a correctly rated unit for each application. In each series of parallel shaft and right angle reducers, cataloged sizes range up to 1,570,000 lb-in. torque at the (11 inch dia.) low speed shaft. (Other standard designs to 25,000,000 lb-in. torque; custom designs for higher capacities.)

UNMATCHED VERSATILITY The "Basic Y" speed reducer design permits economical modification to meet a multitude of specific requirements. Smooth, flat surfaces simplify mounting of motor brackets, backstops, brakes, and any number of other accessories.

RUGGED HOUSINGS Sturdy housings not only provide maximum rigidity to maintain proper alignment of gearing, but also have the strength to support heavy overhung loads and withstand accidental blows.

DEPENDABLE FALK GEARING Gears are selected with the proper proportions and hardness to provide the optimum combination of maximum durability and strength for high shock as well as uniform loads.

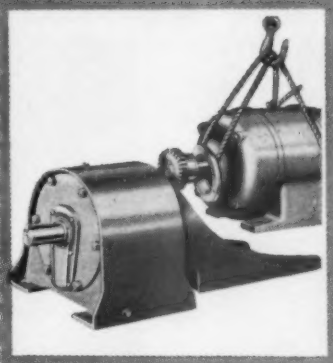
BEARINGS TO SUIT THE OVERHUNG LOAD Standard reducers can meet custom-built requirements with optional stock bearings and shafts (at only a nominal extra charge.) Maximum overhung load capacities are so great that for some conditions, still within the capacity of the reducer, extra strong supporting foundations and bolts must be provided.

DOUBLE GEAR LIFE Standard double ended shafts can be reversed end for end to bring into contact the unused surfaces of the gear teeth for twice the normal gear life.

SEALS FOR ALL CONDITIONS Standard equipment oil seals assure oil-tight and dirt-free gear units for normal applications. Standard abrasive and moisture-resistant seals available upon order.

THE FALK CORPORATION, MILWAUKEE 1, WISCONSIN
MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS
Representatives and Distributors in most principal cities

SOME OTHER MEMBERS OF AMERICA'S FIRST FAMILY OF POWER TRANSMISSION PRODUCTS



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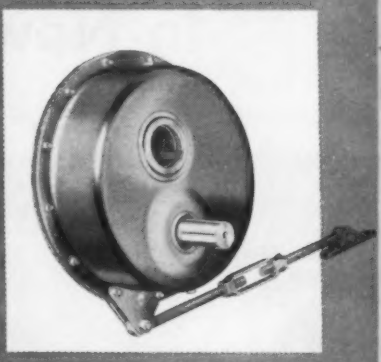
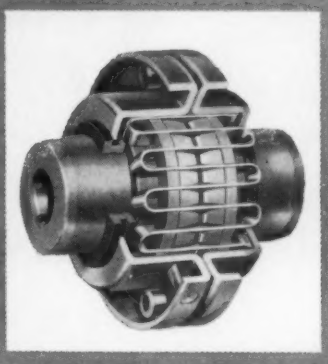


SHAFT MOUNTED DRIVES



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FM Radio Solves Many Problems In New York Trap Rock Quarries*

Base station operation—Joe Marglass, West Nyack storekeeper, broadcasts a message to one of the New York Trap Rock mobile units. Bill Scunda (left), a member of the preventive maintenance department, participates in the conference.

THE recent installation of a two-way FM radio system in New York Trap Rock Company's quarries on the Hudson River has already resulted in many benefits to the firm's operation at West Nyack, N. Y.

Trap Rock's FM radio system, licensed by the Federal Communications System to operate on a frequency of 154.600 megacycles, with a call sign designated as KAR884, has been operating successfully since last year. The radio setup was originally instituted at the Tomkins

*From *Screenings*, published by the New York Trap Rock Corporation.

Loading operations—Charlie Meluccie, loading dock foreman, places a call to the Haverstraw plant base station to check a detail on a shipment.

Left: Preventive maintenance — The two-way radio hook-up saves valuable time and prevents unnecessary travel for the preventive maintenance group. In this photo, Wade Palen, supervisor, issues a radio report on the progress of his investigation.

►Better intraplant communication ►Reduced operating costs ►Safer, more efficient blasting ►More flexibility in operations achieved

Electrical maintenance — Electricians Bud Simpson, using the mike, and Joe Pavelock, climbing the utility pole, check with their foreman from a remote section of the Clinton Point quarry.

Cove plant, then installed in the quarries at Clinton Point, Haverstraw and West Nyack. General Electric equipment is used.

Basically, the two-way radio hookup has resulted in the following:

- A more effective method of communications between key personnel.
- A substantial reduction in operating costs.
- Improved blasting procedures to augment the company's outstanding safety program.
- Increased flexibility of plant operations.

Communications Improved Better communications is a natural result when mobile units such as jeeps, utility trucks, plant autos operated by superintendents and their assistants, and other mechanical units are equipped with radios. Radio eliminates the dispatching of messengers or supervisory personnel to locate other personnel needed to meet emergencies or correct situations demanding attention.

Reduced Radio Costs How are operating costs cut? Use of radio naturally means the speedy location of personnel and results in a great saving of time —and time means money. The time ordinarily spent by personnel combing the vast areas of a quarry would be spent on normal operational matters. *(Turn page)*

Equipment dispatching — "Roger. I'll report to the 3/8 pile," Nick Gizzarelli, operator of a front-end loader at West Nyack, radios back, replying to a directive ordering him to another section of the loading area.

Stock verification — Bob Monroe, assistant storekeeper at Clinton Point, uses the remote control hookup in the radio system to verify placement of an order for a spare part.

Safety, Better Blasting Blasting procedures are improved. Prior to the institution of the radio program, vehicles had to be sent scurrying around the quarry to each of the watchmen's posts, just prior to a blast, to determine if all were clear. Now, in a matter of seconds, the lookouts can give the signal to proceed—and miles of travel (and lots of time) are dispensed with. The superintendents, supervisors, blasters, and seismologists are all now in "voice control" of a blasting situation.

Operating Flexibility Greater flexibility of operations, better control of production methods, and the ability to render decisions more readily—these are other advantages. Consider the case of a situation which demands a decision involving several departments. Radio would permit representatives to participate in a conference-type communication which would facilitate a prompt decision.

Repairs Expedited A breakdown, the old bugaboo of the production department, and an emergency situation can be more quickly rectified. In one instance there was a delay at the quarry face. . . . When large stones blocked the path of haulage trucks, a front-end loader was contacted in another section of the quarry and summoned to the scene. Production was resumed within minutes.

Loading dock foremen who previously had to telephone or relay messages to repair foremen now can make fast contact. One plant official notes that phone calls "have been cut by 50 percent."

Code Systems One of the reasons for the success of the program is the code system used. A code 200 series is used at Clinton Point, 400 at Tomkins Cove, 500 at Haverstraw, and 800 at West Nyack. These figures, in-

Blasting monitoring—Bob Mead, seismologist and acoustician, sets the seismograph in operation just seconds before a scheduled blast at the West Nyack quarry. His companion, "Smitty" Schmidhauser, listens to the count down on the short wave radio. Their operations are carried out on the veranda of a residence not far from the quarry face.

Left: Blasting control—The two-way radio in service during preparation for a blast in the quarries. Earl May, blaster at West Nyack, checks over the mechanism of an electrical blasting machine just prior to detonating the charge. Jim Bednar, quarry supervisor, makes a last minute check with all personnel participating in the operation.

Right: Distance contact—The portable radio set is used to advantage at Clinton Point aboard the firm's tugboat Dolomite. Paul Americo and Paul Emmett can now remain in close contact with Frank Ceroni, loading foreman.

Personnel location—Joe Perini, mill repair foreman at Haverstraw, informs all stations of his location, announcing that he will be leaving his mobile unit to inspect some equipment.

Drilling operations—Mel Heaphy, operator of a well drill at Haverstraw, and Morris Gilbert, maintenance crewman, tune in for drilling instructions.

Instant contact—"Calling 801 or 802." This radioed message will prompt West Nyack Superintendent George Foster or his assistant, Tom Lynch, to pick up the mike. In this photo, Mr. Lynch responds to the call via the unit in a company auto.

cidentally, are those of the primary base station at each of the plants.

At all of the plants, the superintendents are number 1 (401, for example, for John Jorgensen, Tomkins Cove superintendent) master mechanics are number 4 in each plant, and electricians are number 7.

As set up in the manual, "the first digit is the plant number, and the remaining numbers indicate units rather than people; and in an effort to avoid confusion, the numbers are uniform in all plants."

Uses of FM Vary How does radio use differ at the various installations? And what are some of the special uses of the wireless instrument? At Clinton Point, for example, a portable radio aboard the tug *Dolomite* puts the two-man crew, Paul Americo and Paul Emmett, in better communication with Frank Ceroni, the loading foreman. The tug must put the empty barges under the loading chute and place the loaded ones into proper position to be conveyed by larger tugs to the market or the customer's docks.

At Haverstraw, Mel Heaphy and Alex Lewandosky, well drill operators in the upper level remote areas now can be in quick touch with personnel. Roving electricians can be quickly contacted in non-accessible areas. Preventive maintenance department members, headed by Wade Palen, can be summoned promptly. They, in turn, are in touch with storehouses to locate that vital piece of equipment or spare part.

Nick Gizzarelli's radio in his front-end loader at West Nyack provides him with the word enabling him to get to any one of the stone piles in a hurry to fill a waiting truck.

These are some of the many ways in which the short wave radio system is used advantageously. Wally Dillon, electrical engineer, and Wade Palen, supervisor of preventive maintenance, will probably come up with some additional uses. One plant official said, "We've just scratched the surface; each plant is offering ideas to the others—and we all benefit from these suggestions."

the A,B,C's of safety

By H. E. CARROLL

THE ABC's of safety can be used to develop or renew an interest in your safety program and to stimulate your thinking for new and better methods of reducing the accident rate in your plant.

A AIM for a new safety record. Set your sights higher and keep your eye on a safety goal —fewer accidents and, hence, a lower insurance cost.

B BUY safety equipment and clothing. Dollars invested in safety attachments and protective clothing for your employees pay handsome dividends in better morale and fewer lost-time accidents.

C CREATE a feeling of pride in safe work. By constantly building up employees who are safe workers, you can teach the show-offs that their careless attitude is not appreciated by management or by other employees.

D DEVELOP a better safety program. Any training program can be improved with new methods, approaches, or ideas that will retrain employees in safer ways of performing their work.

E EXPECT everyone to become safety conscious. Enthusiasm is contagious. When top management is enthusiastic about safety, this enthusiasm quickly spreads over the entire organization.

F FIRE all accident-prone employees. Better yet, check past records of prospective employees; and don't hire people who are known to be accident-prone. You will reduce your insurance rate and help protect your other employees.

G GIVE safety awards with showmanship. Regardless of the extent of your safety award program, you can doubtless improve it. Give your safety awards with a flourish.

H HOLD regular safety meetings. When safety meetings are held regularly, everyone becomes safety-conscious as the meeting time nears. New suggestions are more likely to be developed if new ideas and procedures are the order of the day at regularly scheduled meetings.

I INVESTIGATE all accidents. Complete and careful accident investigation improves your safety program. Causes of accidents can be eliminated; your employees will feel you have a sincere interest in their welfare; and everyone becomes more safety-conscious during the investigation.

J JOIN safety organizations. Meeting with other firms to discuss safety problems helps your safety program. Ideas picked up from other firms can often be modified and adapted to solve your safety problems.

K KEEP your safety program in high gear. Putting emphasis on safety *after an accident* is natural, but the emphasis is already there in the minds of your employees. Keeping interest high *at other times* is more difficult, but it pays dividends by keeping the accident rate low, or at zero.

Safety may seem as simple as ABC; but the fundamentals--the ABC's--of safety must be learned and APPLIED, if plant accident rates are to be reduced.

L LAY OUT all work areas to incorporate all safety factors. This will include location of equipment, routes of material-handling equipment, and safety color painting to highlight potential accident areas.

M MAIL safety information to your employees' homes. Their families can be a big help in your safety program. Mail the safety news to the homes, so that the information will be discussed in the family group.

N NAME key employees to a safety committee. This puts more people into the safety act. Through committee action more and better ideas are developed to promote safety.

O OVERCOME employee inertia to safety. If you have operated a long time without a serious lost-time accident, your employees may be developing careless habits. You must overcome this dangerous inertia in order to maintain your safety record.

P PRAISE your safe workers in public. A presentation of safety awards before all of your employees makes the award more significant. Publicity on your safety records in local newspapers has the effect of praising your work force.

Q QUESTION all accident statistics to see whether there is a pattern. By questioning all details you may discover that certain work areas, employees in a certain age group, or certain times of the day are noticeable factors in accidents in your plant.

R REPORT all safety activities. Middle-management reports should go to top management and also to the workers. *Regular* reports of safety ideas and promotions develop more safety-consciousness than occasional accident reports.

S STRESS safety everywhere. Use a safety insert in pay envelopes. Display safety posters on employee bulletin boards. Mail safety news to workers' homes. Place safety publicity in your local newspapers. Hold safety contests to keep stressing safety.

T TRAIN all employees in safety. There is a safe way and a dangerous way to handle any work assignment. By stressing the safe way in your job instruction training, you teach employees the right and the safe way to perform the task.

U UTILIZE all safety information. One lost-time accident will cost far more than all the safety booklets and posters you can buy. *Use* this material—don't store it until an accident happens.

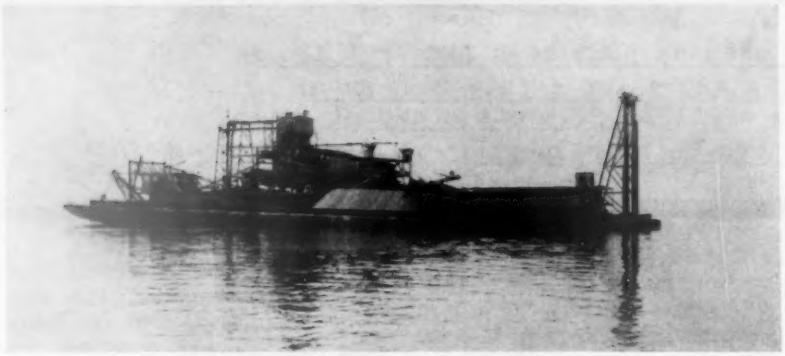
V VISIT other firms. Conditions may seem satisfactory in your plant; but seeing similar equipment in new surroundings may produce many ideas for improving safety "at home." During your visits ask questions and compliment your host on his safety program. He will probably offer plenty of ideas.

W WELCOME all safety suggestions. Employees at all levels have ideas that can improve safety. When these suggestions are welcomed by management, workers are more inclined to submit more ideas; and from these suggestions will come new ways to reduce accidents.

X X-MARK all accident areas. You will provide a constant reminder of safety when you use some distinctive mark for places where accidents have happened. An "X" is a simple way to identify accident areas.

Y YEARN for a no-accident record. Wishing may not make it so; but when you consider the accident cost in terms of suffering, financial loss, and lost time, it is easy to yearn for fewer accidents. Yearning for safety will keep you alert to accident hazards.

Z ZEALOUSLY guard your safety record. Try to extend the accident-free time and reduce the number of lost-time accidents. Remember: Safety is everyone's business—every day.



The dredge H. A. SAWYER, operating here in West Cote Blanche Bay on the Louisiana coast, carries an extensively equipped processing plant.

Premium Markets Supplied From Shell Beds

Dredge H. A. SAWYER processes oyster shell through well equipped plant

THE waters once regarded as the private domain of Jean Lafitte are now the scene of operations far removed from any venture that ever crossed that old buccaneer's mind. They are also supporting a much more consistently profitable business than share-holding pirates ever realized.

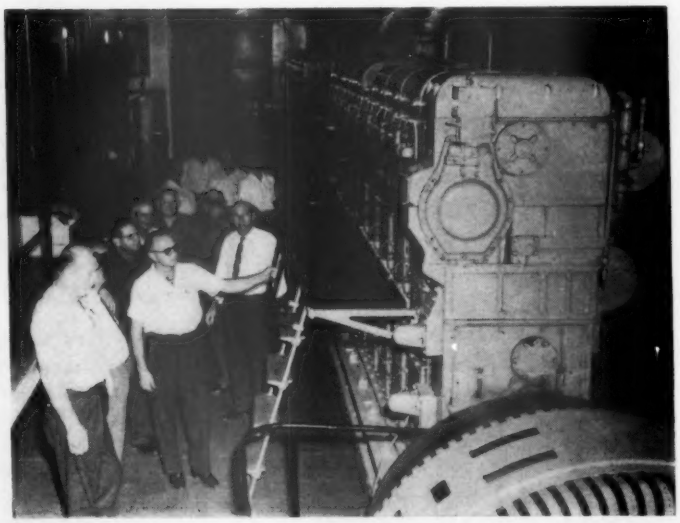
West Cote Blanche Bay, northeast of Marsh Island on the Louisiana coast, is the current operating area of the oysters shell dredge, *H. A. Sawyer*, owned by the Lake Charles Dredging and Towing Company, Inc., of Lafayette, La. Material recovered and processed by this floating plant is produced for such premium markets as chemical, lime, and cement manufacture.

Since the dredge was constructed primarily to serve those markets, it was equipped with washing, sizing, and handling systems that would assure delivery of consistently high-grade material in four different sizes or specified blends.

Constructed of wrought iron, the *H. A. Sawyer's* hull is 330 ft. long, 50 ft. wide, and has a 6½-ft. draft. The digging ladder, with cutter head, is 70 ft. long. Spuds are 40 in. in diameter, and 70 ft. long. Equipment installed on the hull includes the 22-in. Morris dredge pump with its 1,600-hp. Superior diesel engine; an Ideal 1,100-kw. generator driven by another 1,600-hp. Superior diesel, for power; two auxiliary 175-kw. generators; and the processing units. The latter include a battery of stationary screens, a settling tank, two twin-screw classifiers, four scrubbers, four revolving screens, and loading conveyors.

Shell is first pumped to the stationary screens for initial grading. Fine shell falls to the settling tank, and the larger particles pass to the four scrubbers. From the settling tank, fine shell is delivered to a classifier by a water jet system. The shell from the scrubbers flows to the four revolving screens, and fine shell from both the scrubbers and the screens passes to the other classifier.

The loading conveyor system is arranged to deliver fine shell from the classifiers into barges on one side of the dredge, and coarse shell fractions into barges on the opposite side. It is also possible to blend any of the fractions back together to meet the customer's specification.



A view of the engineroom, showing the 1,600-hp. diesels which handle pumping and power requirements.

TWO ROCK MASTERS AND 900′ BLUE BRUTE COMPRESSOR . . .

HIGH FOOTAGE DRILLING TEAM

What makes the best drilling team? Is it maximum footage? Low fuel consumption? Lowest maintenance? It's all these and more.

Look at the Rock Master drill, for example. It has mobility to get around the roughest ground—to move the air compressor; maneuverability to spot the drill where you want it . . . quickly . . . accurately; stability to hold mast alignment for fast, accurate drilling; simplicity to provide long, trouble-free service; plus the WD-45 Heavy Duty 4½" Drifter for fast drilling.

In one side-by-side comparison the Rock Master put down 3.1 holes per hour. The competitive crawler drill put down 2.7 holes per hour. There's other proof, too, that the Worthington Rock Master can outperform any competitive crawler drill.

What about operation? It has easier, safer controls; a more powerful feed motor for faster steel changes; and an automatic line oiler that reduces maintenance.

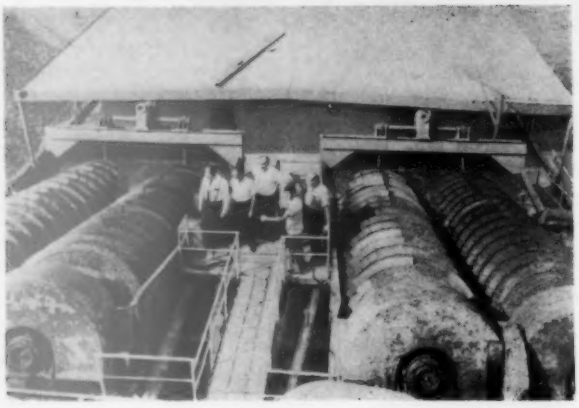
What about air consumption? The air consumption of the Rock Master is so low that you can easily operate two units from one 900′ compressor, as is being done on the job above. Or, one Rock Master can operate from a 600′ compressor with plenty of air to spare for boulder popping, running a bit sharpener, a dust ejector or even a blow pipe for cleaning holes!

For the large volume air supply, you can't make a better buy or rental than the Blue Brute 900′ Compressor. It's efficient —less fuel consumed at the end of the day. And it has all the ease-of-operation and safety features you'll ever possibly need.

To get more information on the Rock Master or on the Blue Brute 900′ compressor, call your Worthington rotary compressor distributor listed in the Yellow Pages. Ask him for a quotation, so you can see the Blue Brute drilling team in a truly competitive light. Or write Worthington Corporation, Dept. 61-1, Holyoke, Mass. In Canada, Worthington (Canada) Ltd., Brantford, Ontario.

WORTHINGTON

PRODUCTS THAT WORK FOR YOUR PROFIT



Left: Fine shell from the stationary screens, scrubbers, and revolving screens is processed through the twin-screw classifiers.

Below: Coarse shell is loaded into barges on one side of the dredge, as seen here, and fine shell is loaded out on the opposite side. A high-capacity wash and jet water system ensures products free of all foreign material.

Loading conveyors range in width from 36 to 54 in.

To ensure that the various products are free of all foreign matter, a high-capacity wash and jet water system was provided. This involves three 16-, one 8-, and two 4-in. pumps.

Operations of the *H. A. Sawyer* are carried out under Captain Edgar Pearson. In addition to the chemical, lime, and cement customers, shell is also supplied for road construction and offshore drilling.

Officials of Lake Charles Dredging and Towing include W. R. Parker, president; B. K. Parker, vice-president; C. T. Parker, vice-president; C. B. Gibbs, vice-president; and W. R. Parker Jr., secretary-treasurer.

U. S. Chamber of Commerce Issues Leaflet on Shelters

The Chamber of Commerce of the United States has announced the publication of a leaflet entitled *Fiction and Facts about Family Fallout Shelters*.

"As Russia achieves an unmistakable capability of launching a successful nuclear attack on the United States, our nation must have more than a retaliatory capability," the writer declares. "We must also have the ability to survive such an attack, to recover, and to rebuild."

According to the leaflet, "For persons beyond a five-mile radius of any direct [nuclear bomb] hit, availability of an adequate family fallout shelter would increase their chances of survival from 1 in 10 to 8 in 10."

Orders of 1 to 9 copies of the leaflet are available free to the public; and there are special prices for bulk orders. Apply to the Chamber of Commerce of the United States, Washington 6, D. C.

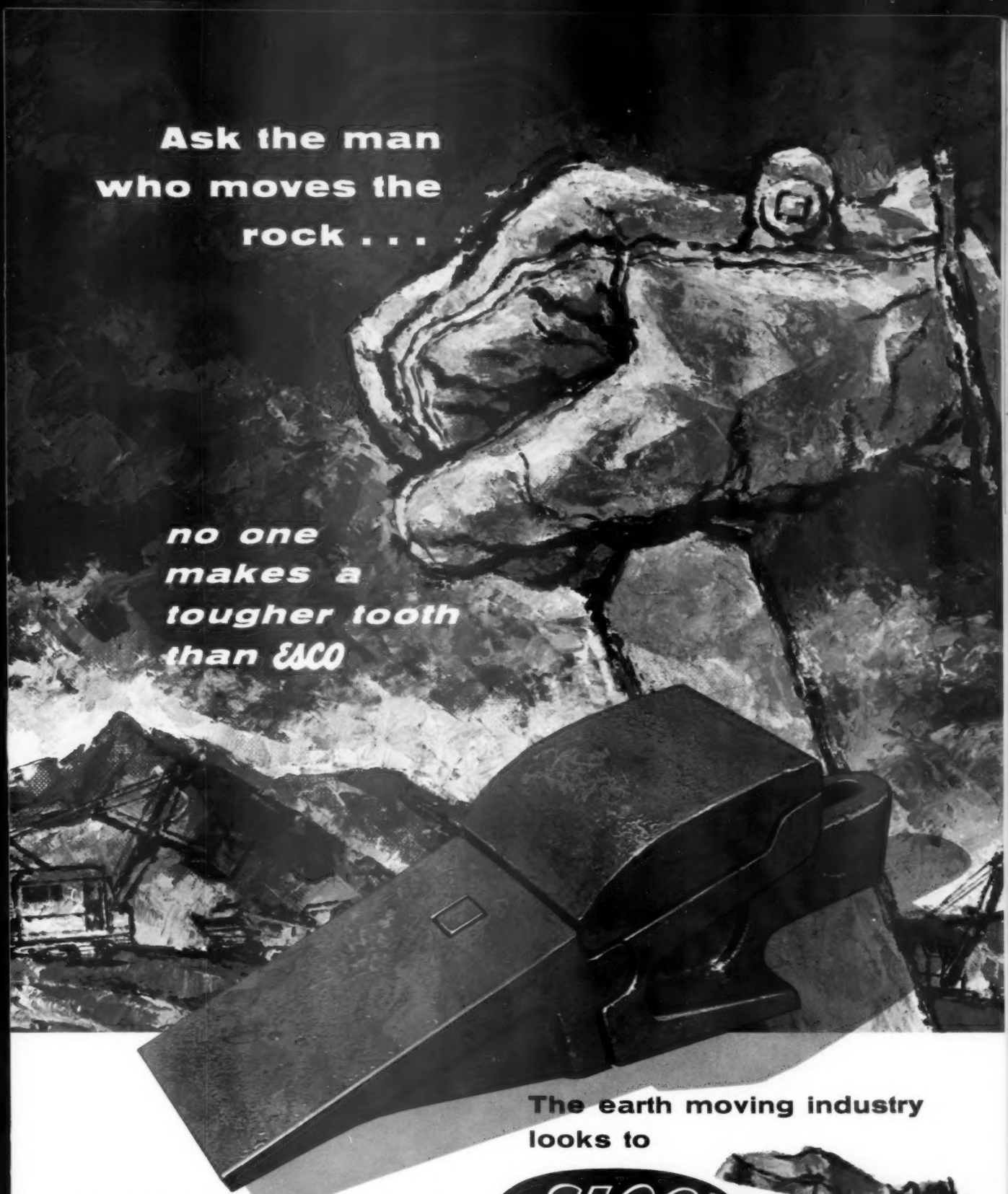
General Electric Company management announced plans for the building of "the nation's largest" industrial repair shop in Cuyahoga Heights, a suburb of Cleveland, Ohio. The plant will replace four other facilities now operated there by G-E. Construction has begun, and the 110,000-sq. ft. shop is expected to be opened next June.

N.S.A. Releases New Report On Slag Concrete Tests

The National Slag Association recently released a report in its high-strength slag concretes series, dealing with flexure and compression tests conducted in the association's research laboratory. The report (file number is *N.S.A. 161-2*) consists of 13 data sheets discussing the strength levels of air-entrained slag concrete as influenced by increased cement factors using normal portland cement and by the use of admixtures. The report includes five tables detailing mix proportions and properties.

Single copies are available from the association, 613 Perpetual Building, Washington 4, D. C.

Enter 103 on card, page 177 →



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for all your digging equipment

Your *ESCO* dealer can supply two piece teeth for all your equipment. Consult him about standardizing on *ESCO* teeth for the added advantages of quantity purchasing and reduction of on-the-job inventories.

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FOR EVERY DIGGING CONDITION

WEAR CAP ADAPTERS

The ESCO Wear Cap Adapter, winner of the Blue Ribbon Mining Award, is the most rugged tooth assembly ever developed for handling tough rock and taconite. Replaceable wear caps sharply increase service life by protecting the adapter from wear. No special pins or welding required.

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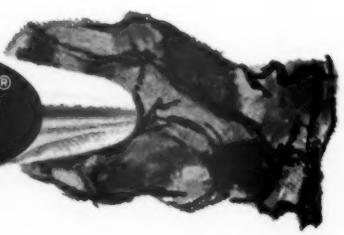


LITHO IN U.S.A.

Drill Maintenance Program Of Large Contract Drilling Firm

THE New Jersey Drilling Company, Netcong, N. J., one of the largest contract drilling organizations in the country, has a long record of trouble-free service on its motive equipment, due largely to its comprehensive maintenance program. Eleven Ingersoll-Rand Drillmasters enable N. J. Drilling to drill more than one-half million feet of 4¾-, 5-, 6-, and 6½- in. diameter holes in a year for quarries and highway construction from Massachusetts to Georgia.

"Every drill operator is trained in preventive maintenance," according to Don McBride, New Jersey Drilling general manager, "and every man in the company can take a drilling rig apart and put it back together again."

Daily reports filed by drill operators from all points on the eastern seaboard where rigs operate record all maintenance performed on the machine. After the reports have been checked by Mr. McBride, the data is transferred to the master maintenance record at company headquarters. Each driller is provided with a complete maintenance schedule, so that he may perform prescribed maintenance after every 8, 24, 50, 100, and 500 hours of operation.

Maintenance performed after eight hours of operation includes filling the air line lubricator with drill oil, draining accumulated water from the compressor separator, checking the compressor system and engine crankcase oil level, and checking the radiator water level. Other maintenance performed at this time includes inspecting parts such as the gear box, hydraulic jacks, feed chain sprockets, oil cooler, and fuel and oil filters.

All fittings are greased every 24 hours; and after 50 hours of operation engine oil is applied to the compressor regulator arm and linkage and to the generator. The compressor oil filter is serviced; the air hoist gear chamber is checked, and oil is added if necessary.

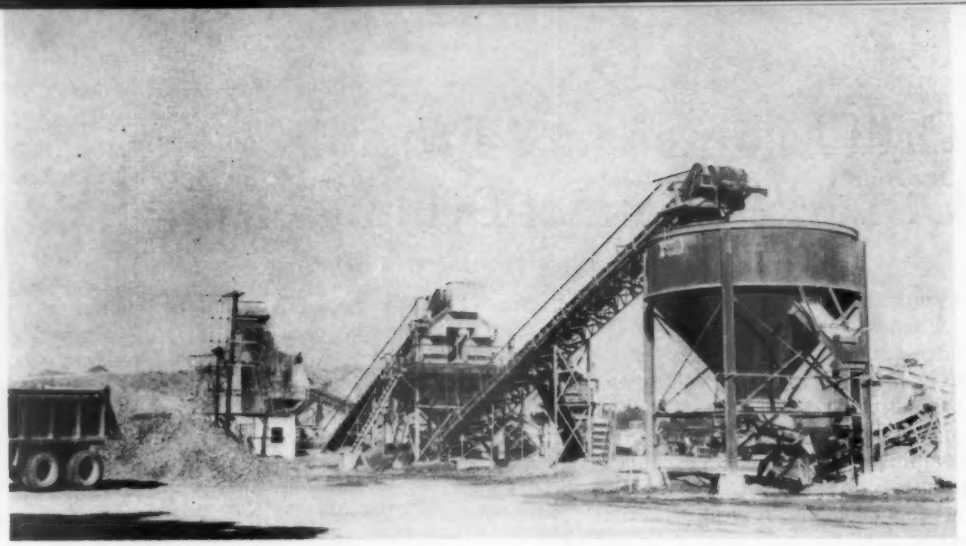
After 100 hours of operation an extensive grease and oil addition program is followed on all subsidiary motors. The 500-hour maintenance check, in addition to inspection of the primary air filter element, includes changing the compressor lubricating oil; replacing the fuel filter and strainer element; inspecting the engine water hose for rot, the generator brushes and the commutator and belt; and cleaning the engine air box. An oil change is also made on the feed motor unit, the propelling motors, the dust collector blower gear box, the air hoist motor, and the rotary drill head.

Management of the New Jersey Drilling Company, which is now drilling 95 percent of all quarries in its state, began analyzing maintenance records for a three-year period in 1958 as a part of an effort

(*Concluded on page* 131)

A dry-type filter element is inspected by Dick Hompesch, maintenance foreman at New Jersey Drilling Company, during a regular 1,000-hour maintenance service.

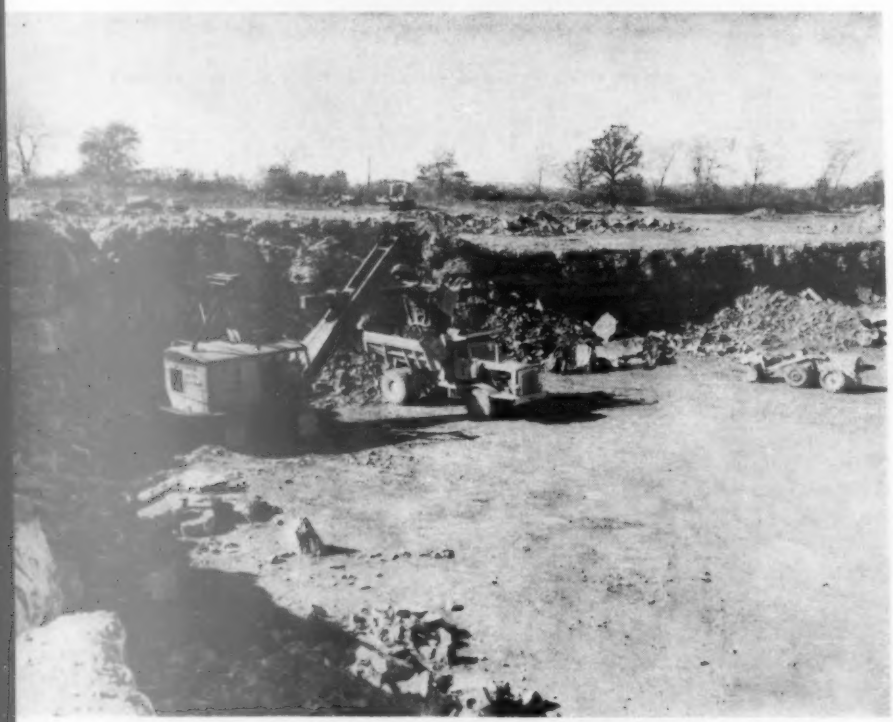
A general view of the outdoor maintenance area at the New Jersey Drilling Company's headquarters, Netcong, N. J.



The primary phase looking toward the primary crusher, left background. At the center are the two scalpers, and at the right the surge bin for the secondary phase.

Aggregate Producers Terminate One Operation— Start Anew in Another Field

◆ **Exhaustion of reserves for older sand-gravel plant spurs development of new 500-t.p.h. crushed stone installation**



One of the 2½-cu. yd. shovels and a 22-ton quarry truck. The face is presently worked on a 30-ft. height, and the quarry will be deepened after extraction of this level.

By **BUREN C. HEROD**

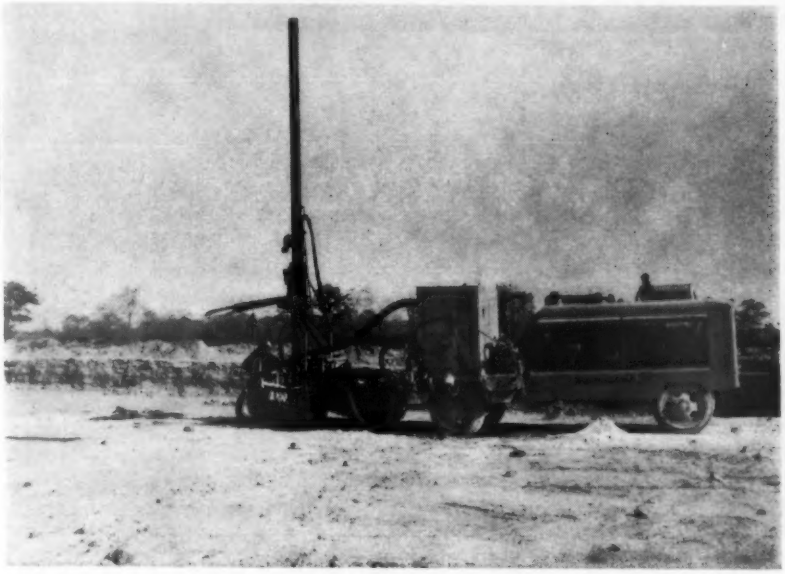
The secondary phase, with four finishing screens above a set of six loading bins, right, and the tertiary crusher, center. Originally set up as a 400 t.p.h. operation, the plant was expanded in its crushing capacity in the last two years to the present 500-t.p.h. rating.

ANOTHER ON THE SPOT report

WHEN the operators of a sand and gravel operation near Buffalo, N. Y., ran out of reserves a few years ago, it was actually the beginning of a new and larger venture in aggregate production. In 1958 Pfohl Brothers, Inc., were nearing the end of their workable sand and gravel deposit. In the absence of other available such materials in the area, it was decided to take an unusual step in order to continue producing aggregates—they began planning a crushed stone operation under the name of Lancaster Stone Products Corporation.

Late in 1958 a new plant was built at Lancaster, east of Buffalo, on a site containing extensive reserves of excellent limestone that meets all state and federal specifications. It is advantageously situated with respect to expanding commercial construction as well as highway projects, and it supplies approximately the same tonnage to each use.

Originally set up as a 400-t.p.h. operation, the plant was expanded in 1959 and 1960 through the addition of more crushing equipment for secondary and tertiary reduction. These additions not only solved the problem of an inadequate quantity of fines obtained during initial operations, but also raised capacity by 25 percent to the present 500-t.p.h. rating.

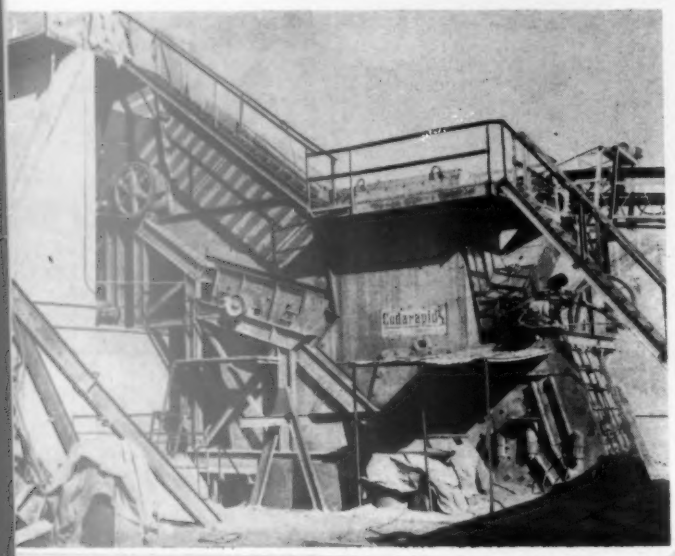


Blastholes are sunk with this self-propelled rig. Both a dust collector for drilling dust and a grinder for field dressing of bits are installed on the compressor chassis.

The plant now makes six basic sizes in the range from 3 in. to dust, inclusive; and in addition to supplying commercial building and road construction, it also furnishes aggregate for the firm's own two hot-mix bituminous concrete operations. The latter, and most of the crushing and screening plant equipment, were supplied by Iowa Manufacturing Company.

Comprised of flat-lying strata, under thin overburden, the Onondaga (Devonian) limestone in which the quarry was opened lends itself to quite clean operation. At present the face is carried forward with a 30-ft. height, but ultimately quarrying will be carried deeper in the extensive tract.

Overburden is removed primarily with bulldozer and pan scraper equipment. On the cleaned top level, 2¾-in. blastholes are sunk with an Ingersoll-Rand CM2 Crawl-Ir rig supplied with air from a companion 600 Gyroflo compressor. The penetration rate in this relatively hard stone is the full 30 ft. of hole in about 22 minutes. All bits and steel with the rig are I-R equipment, and also the grinder installed



The primary crushing installation, including the apron feeder, the vibrating grizzly, and the impactor. Driven by a pair of 200-hp. motors, the primary crusher delivers a product of 6-in. top size.

on the compressor chassis for field dressing of the bits. In addition, a collector for drilling dust is mounted on the compressor chassis.

An average shot involves 30 holes, on a 9 x 9 spacing, which are charged with approximately 1,440 lb. of ammonium nitrate and 625 lb. of dynamite primer. Oil is poured into the bags of nitrate explosive, and the mixture is allowed to set for 24 hours prior to charging the holes. In routine blasting operations, two primers are set at the bottom of each hole, and a booster is placed about half way up. The final 2½ to 3 ft. is stemmed. Shots are initiated with millisecond-delay caps. The normal yield has been 3 tons of stone per lb. of explosive consumed. Any secondary breakage required is done with a headache ball suspended from a Bucyrus-Erie 22B machine.

A pair of 2½-cu. yd. Northwest 80D shovels are used for loading out in the quarry. Haulage is handled by three 22-ton rear-dump Euclids over a distance of about ¼ mile between the quarry face and the plant feed hopper.

The trucks dump into the hopper from an elevated ramp, and the stone is transferred *via* apron feeder to the vibrating grizzly of a Cedarapids primary crushing installation. Grizzly throughs are conveyed laterally to a ground pile of base material, and the retained fraction passes to the following primary breaker.

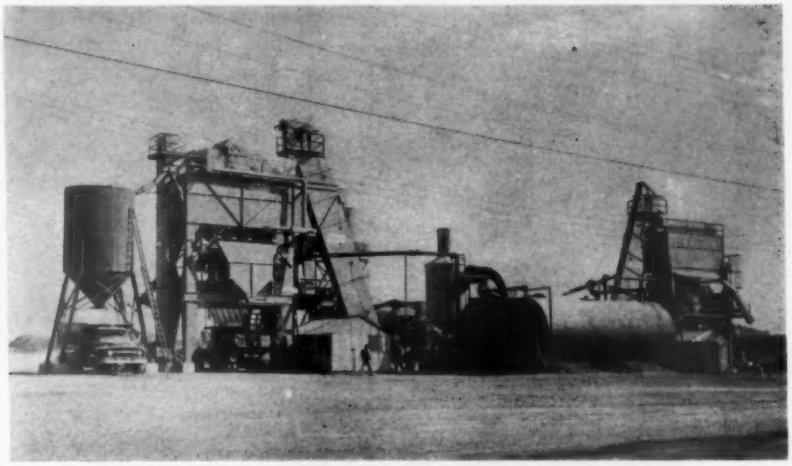
Driven by a pair of 200-hp. motors, the Cedarapids 5360H impactor produces a 6-in. top-size product. This material is discharged onto a 42-in. by 138-ft. inclined belt conveyor for transfer to the scalping phase.

At that point the flow is split at

Left, middle: Secondary crushing is handled by the 4¼-ft. standard cone unit, center. It receives material retained on the bottom deck of each scalper, which had previously been returned to the primary crusher. The latter now only has to handle the scalper oversize as a recirculating load.

Left, bottom: Feed for the bituminous concrete plants originates in this set of five hoppers. Aggregates are trucked here from the crushing operation nearby. One row of five feeders supplies a conveyor leading to one hot mix plant, and the other row discharges onto a parallel belt for the other plant.

General superintendent of the Lancaster operations is George Bogner.



The two bituminous concrete plants are on the same property with the crushing and screening operations which supply them with aggregates. One of the plants is used primarily for batching top course material, and the other for binder.

the top of the scalping tower to a pair of 4- by 12-ft. Cedarapids screens, each fitted with 6-in. opening top decks. The bottom decks have 3- and 2½-in. opening cloth. Retained material on the two top decks is chuted to a return belt and conveyed to the primary crusher. Plus 2½-in. stone from the bottom decks is carried on a short lateral belt to the secondary crusher, a 4¼-ft. standard Symons cone unit. The installation of this secondary crusher raised throughput by eliminating a part of the load originally carried by the primary breaker, which in the original layout had the entire recirculating load of scalper oversize.

Discharge from the secondary crusher joins the scalper throughs on a 42-in. by 90-ft. belt, and these materials are conveyed to a 200-ton steel surge bin which separates the two processing phases.

A Syntron feeder, handling up to 500 t.p.h., is installed below the surge bin to deliver stone to a 36-in. by 215-ft. conveyor that supplies the final screening installation. The latter is comprised of a group of four 4- by 12-ft. Cedarapids screens, in two pairs, mounted above a set of six steel loading bins. Each bin has a 50-ton capacity.

This phase of the operation also incorporates tertiary reduction, which is done with a 4-ft. short head Symons cone crusher.

At the top of the finishing screening plant, the feed from the surge bin is split to the first pair of screens. These triple-deck units are equipped identically with screencloth to make separations of the three largest product sizes—3-in., 2½-in., and 1-in. —that are chuted into the appropriate underlying bins. Bottom-deck throughs join on a 30-in. by 54-ft. belt for transfer to the final pair of screens.

The latter are double-deck units, also fitted identically with screencloth, and make separation of the three smaller sized fractions, *i.e.*, ¾-in., ½-in., and dust, which are chuted to the three remaining underlying bins.

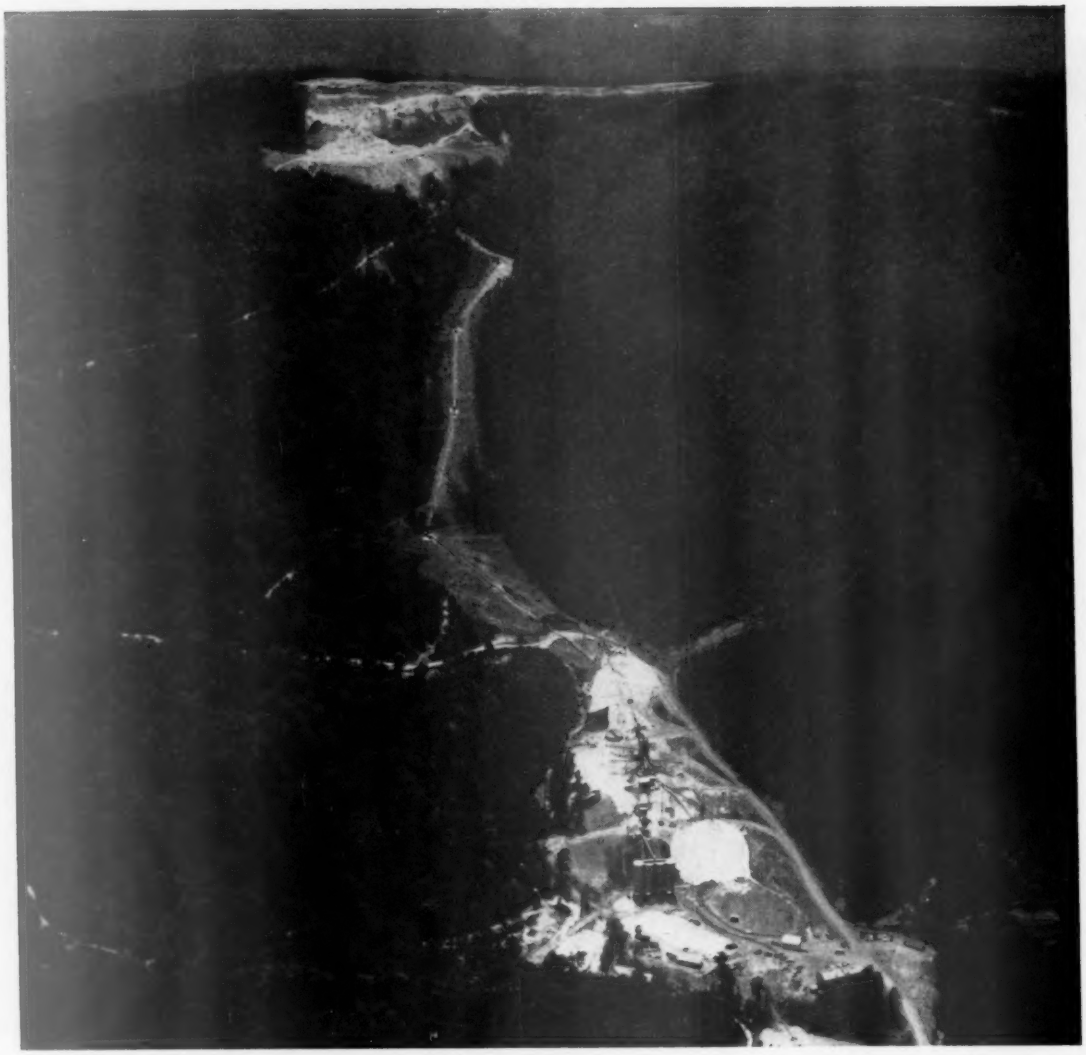
In producing larger quantities of the smaller sizes than normally delivered in the above processing flow, any or all of the three larger fractions in the screening plant bins may be introduced into the tertiary crushing circuit. This is accomplished by drawing from each of the three bins involved through side gates onto a 30-in. by 110-ft. horizontal conveyor. This belt discharges into the tertiary crusher, and the products of tertiary reduction are carried on a short return conveyor to the screening plant feed belt.

Below each of the screening plant bins are manually operated gates through which transport or stockpiling trucks are loaded. Customer delivery is done with both contract haulage or the firm's own vehicles. Loading from stockpiles is done with a pair of Hough Payloaders. These machines are also used in general utility work such as shoving fly rock over the quarry face to the shovel operating area, cleaning up around the shovels on the quarry floor, and maintenance of haul and plant roadways.

Shipments from the crushed stone plant are weighed out over a Fairbanks-Morse truck scale. In supplying the two Cedarapids hot-mix plants, which are set up on the plant site, aggregates from the bins or stockpiles are trucked to a row of five steel hoppers.

Under each of the hoppers are two Syntron feeders. One of each pair delivers material onto one belt, and the companion feeder supplies a parallel conveyor. One of the conveyors delivers aggregate to one of the bituminous plants in which top surfacing material is primarily produced. The other conveyor supplies the plant which produces binder or similar materials. Each of the hot-mix facilities delivers 2½-ton batches, and delivery to job sites is done in the firm's own trucks.

Over-all operations in the Lancaster installations are managed by George Bogner, general superintendent, who heads a crew of 25 men. Top officers of the company include J. Pfohl, president; P. Pfohl, vice-president; and F. Pfohl, treasurer.



AERIAL VIEW, above shows overall operations from mountaintop quarry to the preparation plant site carved out of the mountainside. The zig-zag path of the five flights of Barber-Greene belt conveyors that deliver crushed silica from the peak to the plant is clearly visible from the air.

QUARRY CLOSEUP, lower left, shows how the quarrying is done at the very top of the mountain with the blasted silica dozed over the cliff to the level of the crushers. The primary surge pile is shown at the extreme left with the first downslope conveyor starting at that point.

HOW REMOTE SILICA SAND RIDES CONVEYORS FROM MOUNTAINTOP TO MARKET

This huge mountain-straddling deposit of almost pure silica sand, thought to be out of reach of profitable processing until mid-1960, now rides Barber-Greene belt conveyors from mountaintop to market at 400 tph.

Operations at the Silica Corp., of America plant, Elkhorn City, Ky., follows this tri-level operational pattern:

MOUNTAINTOP – Silica is blasted loose in the quarry, dozed over a cliff face for additional breakup, crushed to minus 4″ size, and conveyed to a primary surge pile at the peak. Quarry elevation is 700′ above processing plant.

SIDE SLOPE – Five flights of 30″ Barber-Greene belt conveyors totaling 2,710′ in length do a spectacular material-moving job in transporting 400 tph of crushed silica from the surge pile at the quarry to the preparation plant. This plant, fed from a secondary surge pile at the site, removes impurities and stores clean sand in silos. Trucks are loaded from the silos for direct shipments to customers or for shuttling to the rail terminal.

MOUNTAIN BASE – Rail siding with silo storage and automatic loading equipment speeds carload silica shipments.

Your Barber-Greene Conveyor Representative can deliver an equally ingenious and profitable material-handling system to your specs when you open new operations or expand old ones. That's what makes the belt conveyors he sells the overwhelming No. 1 choice of pit and quarry operators.

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CONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT

LAST LAP, left, silica moves from fourth to last downslope conveyor onto 60′ high secondary surge pile at plant. Unique use of transfer point stone ladders, shown in foreground, permits conveyors to follow mountain contour and substantially reduced total length of conveyors required. Conveyor drives apply braking force rather than drive force and generate approximately 250 hp.

PLANT VIEW, shows silica being reclaimed from secondary surge pile and directed into plant for cleaning. Downslope conveyors have four-way power shut-offs to set brakes, giving complete control flexibility should abnormal loading situations occur. Overspeed or underspeed of any belt automatically shuts off power to preceding conveyors in the system. Manual control also provided with master switches and local switches at each drive unit.

Pittsburgh Plate Glass Cement Plant served by deepest limestone mine

THE "tallest" cement operation in the United States is the Cement Department plant of the Pittsburgh Plate Glass Company, Chemical Division, at Barberton, Ohio.

Its unique top-to-bottom height is accounted for by the source of limestone, a mine 2,250 ft. deep, directly under the cement installation. Capable of producing 1,500,000 bbl. of portland cement a year, the unit was placed in operation as one department in a complex industrial chemicals plant.

Pittsburgh Plate Glass entered the cement business in the 1920's at Zanesville, Ohio. A limestone quarry was started there to supply stone for Barberton's soda ash operations. Limestone that failed to meet chemical operation requirements was put to use in a cement production venture.

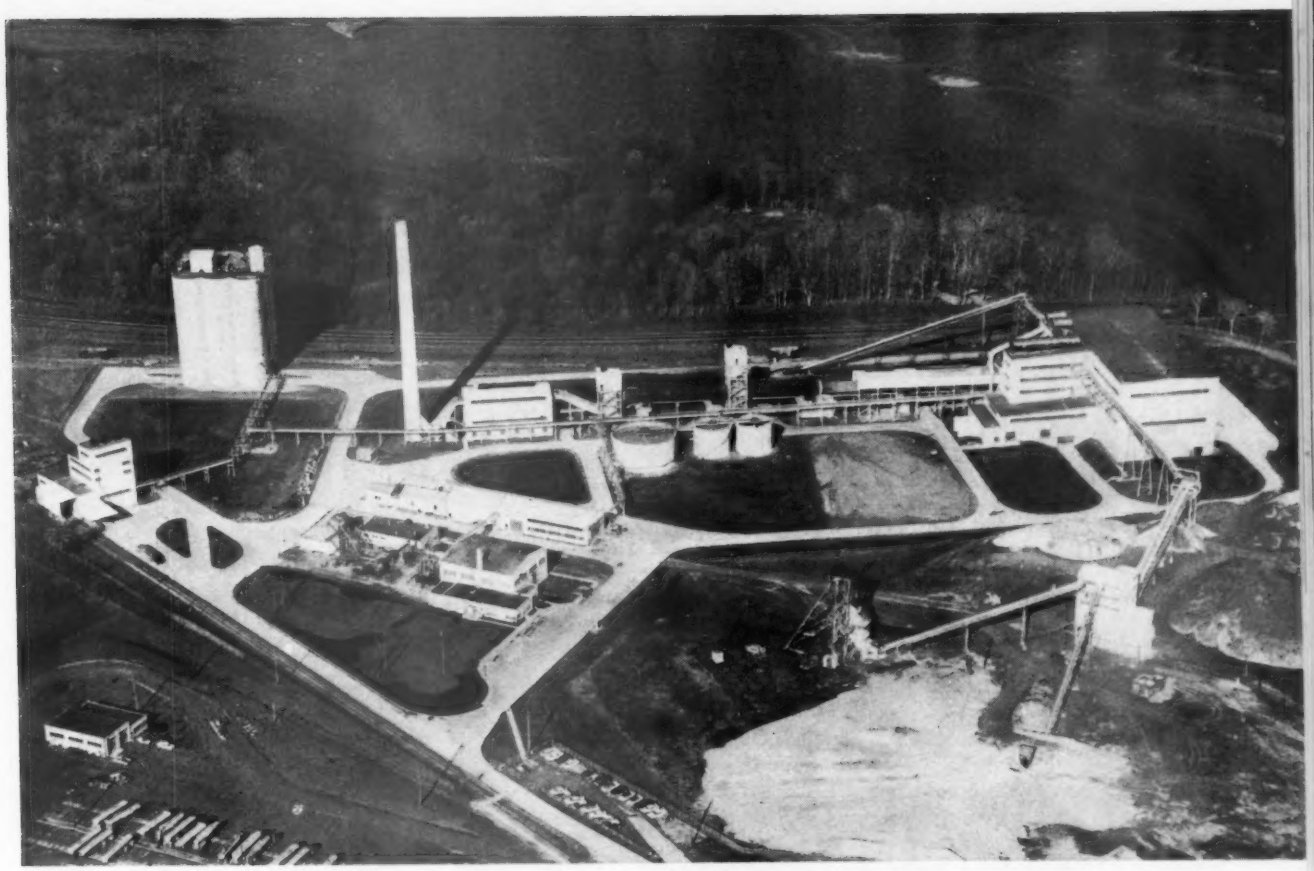
The Barberton limestone mine, the deepest in the United States, was started in 1941.* The major portion of the stone mined there is used in the chemical operation.

Small size-stone which could not be used in the chemical operation was a natural source of raw materials for a cement production unit. Since the cement needs of the area were increasing and market studies indicated that demand could absorb added production, construction on the new unit was started, and it was placed in operation in the fall of 1959.

The Barberton cement unit, which now has a capacity of 4,500 bbl.

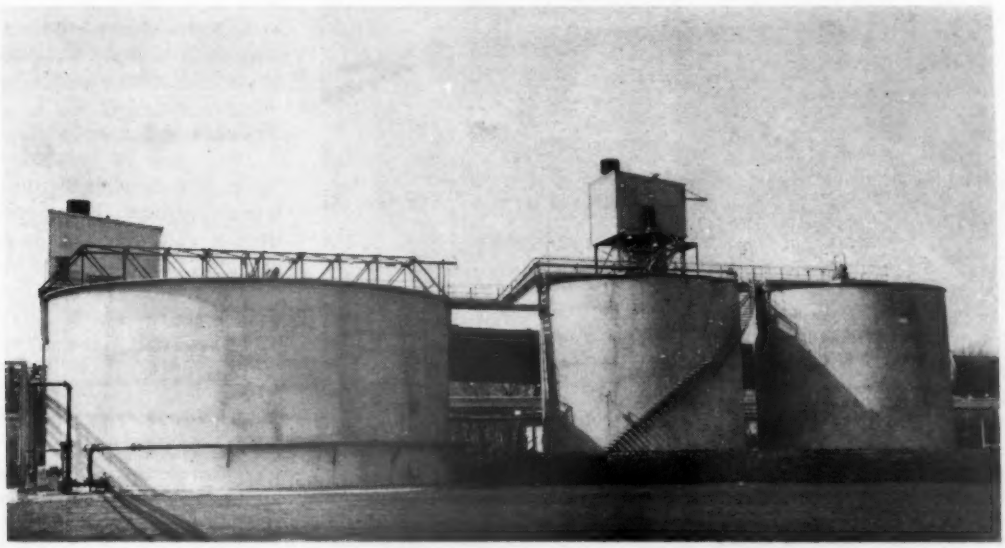
*See PIT AND QUARRY, November, 1947, pp. 94-102.

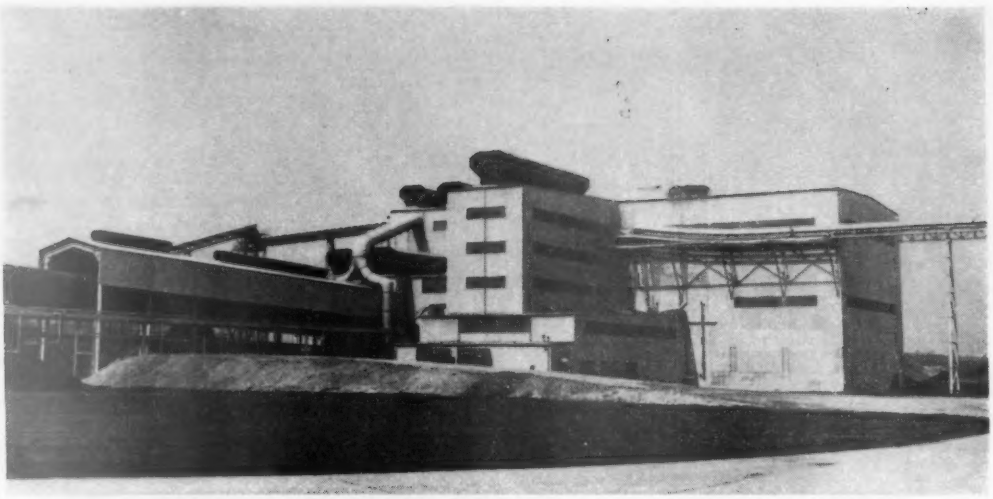
SOURCE OF THE LIMESTONE for the Barberton installation is this mine, 2,250 ft. underground. There are more than 40 miles of tunnels in this mine.



AN AERIAL VIEW of the Cement Department plant of Pittsburgh Plate Glass Company, Chemical Division, at Barberton, Ohio.

MATERIAL FROM THE RAW MILL enters the slurry tanks on its way to the kiln. These tanks have a combined capacity of more than 1,000,000 gal.



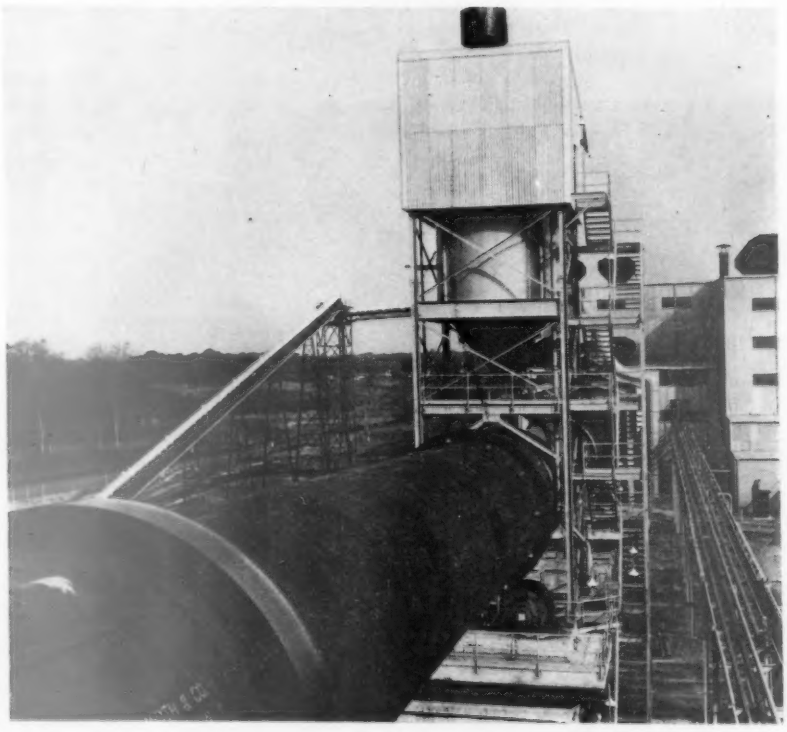


THIS BUILDING houses the raw- and finish-grinding mills. The crane storage structure for clinker and raw materials can be seen in the right background.

per day, is constructed to permit expansion up to several times its present size. The entire installation is engineered to achieve maximum cleanliness. All exit gases are cleansed by some type of dust collection unit. In addition, three of the buildings have centrally located vacuum cleaning systems. The P.P.G. unit is one of the first wet-process plants using a silicone-treated glass cloth bag collector system under negative pressure.

The installation also features the use of autrometer (X-ray spectograph) for quality control, drive-in silos, and automatic loading to exact weights. Electrical power for the operation is produced at the main chemical plant and is brought in at 13,800 volts.

General service water also comes from plant sources. A man-made lake situated directly adjacent to the cement unit has a capacity of 500 million gallons of water.



THE 13- BY 460-FT. ROTARY KILN, which is equipped with a slurry preheater, chain sections, and a stainless steel cross section.

KEY FEATURES

In addition to the ready supply of stone from the mine, other materials used are also local products. Cinders, providing the primary source of iron, come from a wet-bottom boiler at the main plant. Strip coal is trucked in from within a 30-mile radius, and the source of clay is only 25 miles away.

Process All stone fed into the process is crushed to minus ⅝-in. size through the utilization of a cone crusher. The proper proportion of raw materials is controlled automatically by weight feeders.

Wet grinding of the stone is performed in a 9½-ft. diameter by 36-ft. long mill, powered by a 1500-

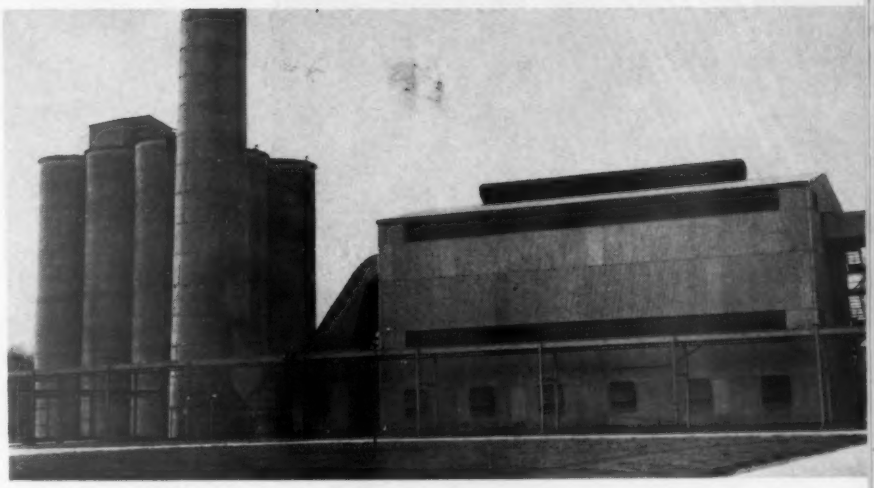
hp. motor. The mill is charged with alloy steel balls with diameters ranging from 3 in. to ⅞ in. in proper proportions to effect maximum grinding efficiency.

The slurry is pumped to three blending tanks holding more than 1,000,000 gal. Blended slurry is then pumped to a 14½- by 13- by 460-ft. long kiln, a slurry preheater, chain sections, and a stainless steel cross section.

This combination of machinery affords the greatest kiln efficiency. The kiln is fired by powdered coal. The mill used to powder the coal to 85 percent minus 200-mesh has a capacity of 300 tons per day.

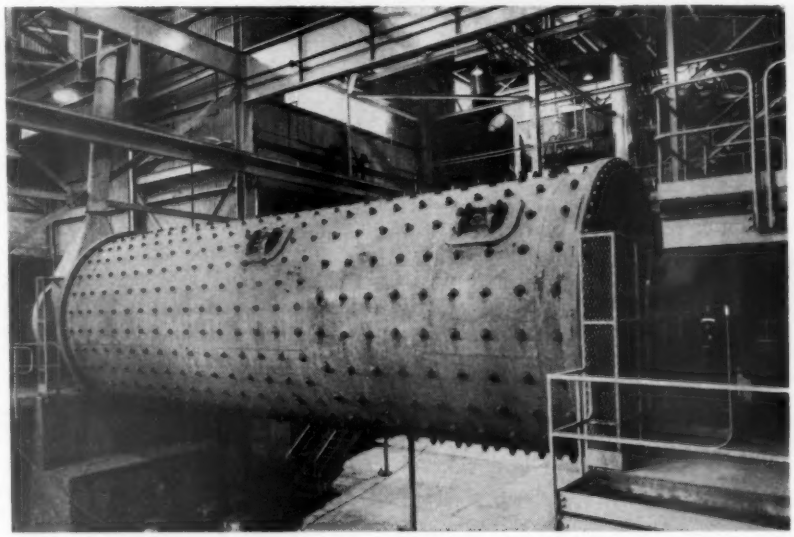
Five types of various grades of 6-in. refractories are used to provide insulation for the kiln shell. Kiln speeds range from 20 to 75 r.p.h., normal operating speed being 65 r.p.h.

Exit gases from the kiln are cleansed with a glass-cloth silicone-treated bag collector utilizing bags 1 ft. in diameter by 20 ft. 10 in. long. The cleansed gases are discharged into the atmosphere through a 250-ft. stack which is 11 ft. in diameter. The efficiency of the system is rated at 99 percent. Dust collectors are operated under negative pressure with a 450 hp. induced-draft fan.



THE GLASS CLOTH BAG kiln dust collector building, cement storage silos, and stack. The kiln inlet is shown at the right. There are nine silos, with four interstices.

FINISH MILL. The 2,000-hp. 11- by 32-ft., two-compartment finish mill, with the kiln firing hood in the background. The mill is equipped with an internal spray system.



Kiln Control Secondary air is controlled automatically by the amount of air introduced in the first section of the horizontal grate-type clinker cooler. Temperature is maintained at 1,200 deg. F.

Primary air temperature is kept at 170 deg. F. by a tempering damper on the inlet to the coal mill. Burning zone temperatures, recorded by means of an optical pyrometer, are generally held to temperatures around 2,650 deg. F.

Rated capacity of the kiln is 4,500 bbl. per day. Fuel rates are less than 1,000,000 B.t.u. per barrel.

Clinker Cooler An 8- by 50-ft. horizontal air-quenching cooler with four compartments is used to cool the clinker. This unit is equipped with a standard clinker breaker to reduce all clinker leaving the apparatus to minus 2-in. size.

Two 125-hp. fans provide cooling air. The clinker bed depth is maintained by means of under gate pressure of the first zone. Two clinker elevators are used to transport clinkers to crane storage or to the finished mill feed bin. A natural frequency conveyor is used to transport the clinker from the discharge of elevators.

Crane Storage Crane storage, in which a 3-cu. yd. bucket is used, houses clinker and raw materials. It has a 100-ft. span, is 90 ft. high and 236 ft. long.

Concrete feed bins hold the raw materials for the mills. They have a retention time of one-half day for clinker and 8 days for gypsum. Truck dump pits are used since all raw materials enter crane storage by conveyor and truck.

Finish Mill The production installation includes an 11- by 32-ft., 2,000 hp. finish mill with an enclosed circuit. This section also features a mechanical separator. Feed to the mill is regulated by a weight feeder.

The rate of the mill is automati-

HOPPERS under the glass-bag dust collection system, and the kiln flue dust collector.

BULK LOADING. An employee performing a bulk-loading operation. There are two 80-ft. truck scales and one railway scale with electronic cut-offs.

cally controlled by a kilowatt loading of a discharge elevator. Air from the separator is discharged into the atmosphere through two dust collectors. The mill is charged with 270,000 lb. of balls ranging from 2 in. to ¾ in. in size.

The two-compartment mill is equipped with an internal spray system to control the outlet temperature. Finished cement is air conveyed to silos.

Cement Storage The storage area includes nine drive-under silos, 33 ft. in diameter and 140 ft. high, with four interstices. The silos were erected in a seven-day continuous operation, by means of slip form construction.

The silos are ventilated by a 5,000 c.f.m. dust collector. The collector features external interventing to the collector. An external 1,800-lb. service elevator, built concurrently with the silos, also serves the unit.

Bulk Loading Two 80-ft. truck scales and one railroad scale utilize an electronic cut-off to insure exact weights for rail cars and truck loading. Loading is handled by Airslide conveyors through rotary bin valves. All loading and weighing is controlled by a console inside the scale room.

Silos are equipped with air pads. Airslides have air jets which are electronically controlled from the console.

Pack House Cement packing is performed by an F.C. 107 St. Regis packer. The cement is transferred from the silos to surge bins ahead of the packer. An automatic bin level control keeps these surge bins filled with the desired type of cement.

Bags are transported by a power conveyor to trucks or rail cars. If the customer desires pallets, palletizing is done as the bags are being loaded. Expendable pallets are used exclusively. Bagged cement is shipped by rail or truck.

Laboratory All cement control, testing, and analyses are performed in a laboratory situated in the mill building. The laboratory, equipped with office facilities, is divided into chemical and physical sections.

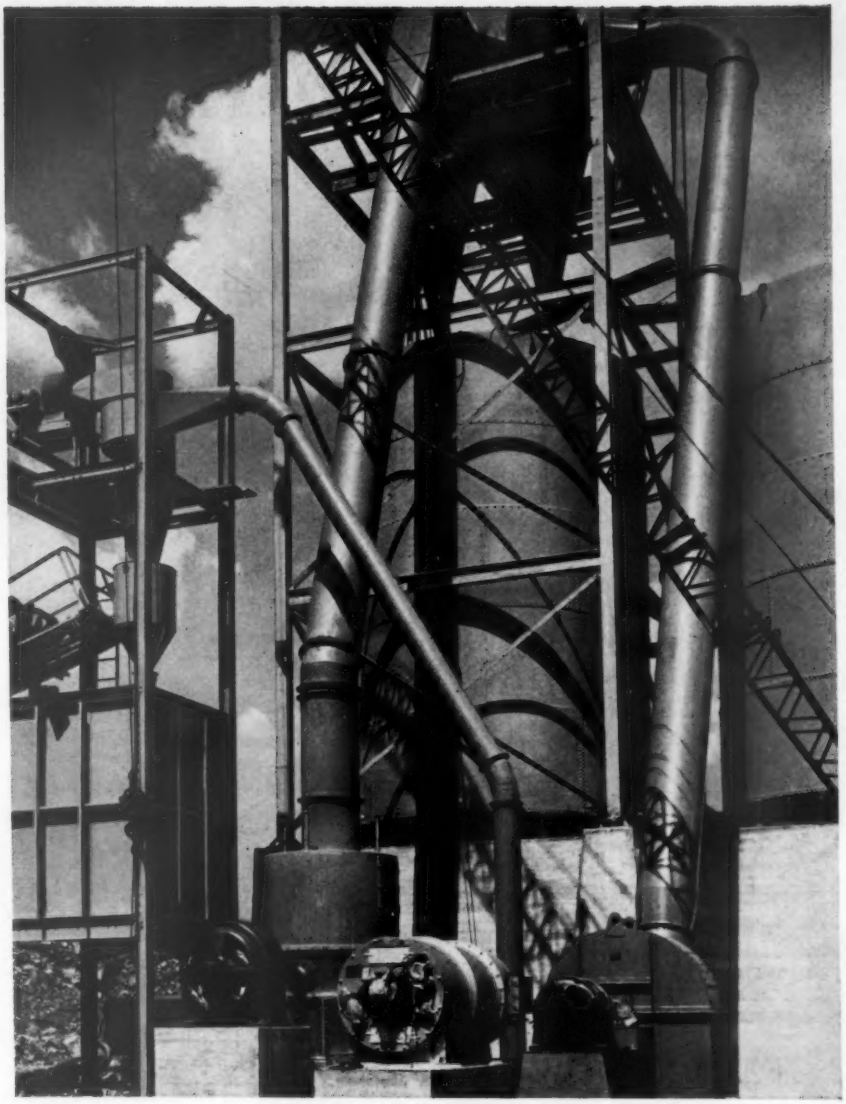
The laboratory contains the most modern testing equipment available for the testing of cement. An autrometer is used to perform chemical analyses of slurry and cement.

A humidity room is available for curing cement samples according to A.S.T.M. standards. This 99 percent, 70 deg. F. humidity room is adjacent to the physical section of the laboratory.

Products, Sales, Distribution All cement from the Barberton plant is marketed by the Columbia Cement Corporation, a wholly-owned subsidiary of the Pittsburgh Plate Glass Company.

A large percent of Barberton production is shipped in bulk trucks; the remainder is handled in package trucks and railroad cars. The major portion of cement production is handled by a fleet of bulk trucks owned by contract haulers.

Personnel Barberton's P.P.G. Chemical Division is headed by W. S. Straub, works manager. Area superintendent of the Cement Department is G. C. Strickler. N. G. Rudd is chief Cement Department chemist and J. A. Hanlon is chief plant engineer.



BRADLEY EQUIPMENT

- MILL AND SEPARATOR
- HEATER FOR DRYING
  by Todd Shipyards Corporation
- MILL FAN
- PRIMARY CYCLONE COLLECTORS
- VIBRATORY TYPE FEEDER
- FEED CONTROL
- DUCTING:
  Fan to Mill
  Mill to Cyclone Collectors
  Cyclone Collectors to Fan
  Vent to Secondary Collectors
  by Buell Engineering Co., Inc.
  Northern Blower Division

22 TONS-PER-HOUR AG-LIME AT 98% PASSING 20 MESH

Typical of Bradley work in the grinding field is this Pneumatic Hercules Mill installation at the Pine Creek Plant of Lycoming Silica Sand Company, Montoursville, Pa.

The installation takes Limestone of 2" maximum down to dust and containing, at times, as high as 10 to 12% moisture. The Bradley Mill System produces from this feed 22 tons-per-hour of finished material, with a fineness of 98.5% minus 20 mesh, 72 to 75% minus 100 mesh, containing approximately 1% moisture.

Bradley manufactures a full range of Pneumatic Mills with or without Flash Drying for finenesses up to 325 mesh . . . plus Bradley Hercules Screen-Type Mills to handle your semi-fine pulverizing requirements.

Bradley will test-grind your materials in their grinding facilities at Allentown, Pa. *without cost*. Write for details.

See Chemical Engineering Catalog or write for Bradley Catalog No. 64

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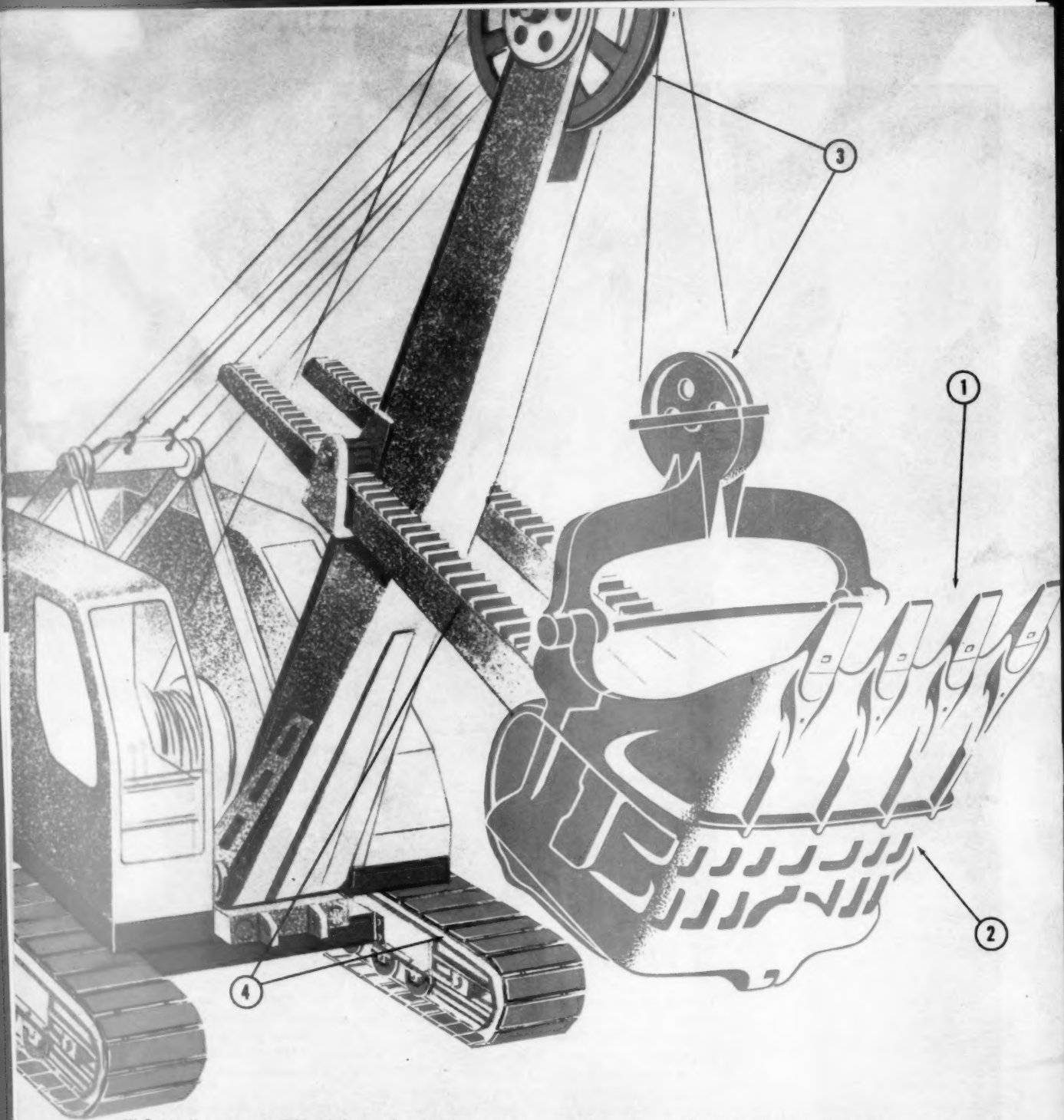
Superior Grinding Equipment Since 1891



(1) Cut tooth costs up to 75% with Amsco Simplex 2-part reversible dipper teeth. Amsco Simplex teeth give you longer digging life while maintaining sharpness. Positive point-to-adapter pin locks stay tight under extreme conditions of impact, side blows, vibration or other shock. Simplex points stay on and are reversed in minutes per dipper. Replace present teeth with Simplex and measure the difference.

(2) Amsco dippers are made of manganese steel—"the toughest steel known"—containing 12-14% manganese. This tough steel provides as much as a 10 to 1 advantage over carbon steels under the abuse of impact and abrasion. Amsco manganese steel work hardens under impact, self-polishes under abrasion and is easy to weld when buildup or repair is needed. All types of dippers are made by Amsco—two-piece welded dippers, renewable-lip designs, Mesabi types, special dredge types and other styles to order.

(3) Worn sheaves shorten line life. Wire rope lasts longer when running in sheaves that stay smooth and even throughout their life. Ordinary flame-hardened steel or chilled cast iron sheaves score, wear and splinter. Splinters cut into wire rope. Amsco manganese steel sheaves work harden under repeated impact and acquire a polish that eliminates splinters. And when a high loading bangs the two sheaves together, Amsco sheaves take the beating without breaking.

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Enter 118 on card, page 177

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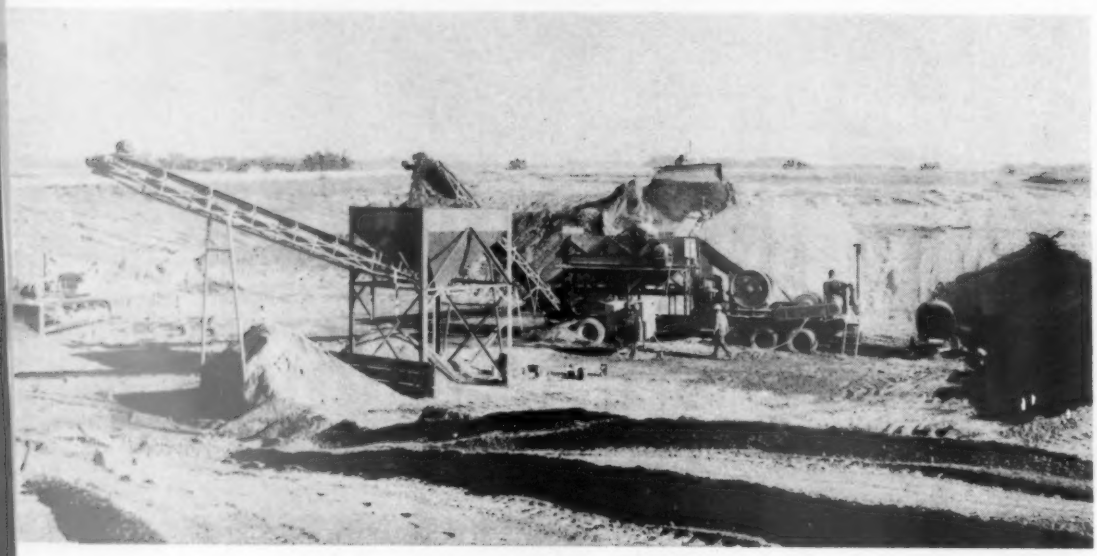
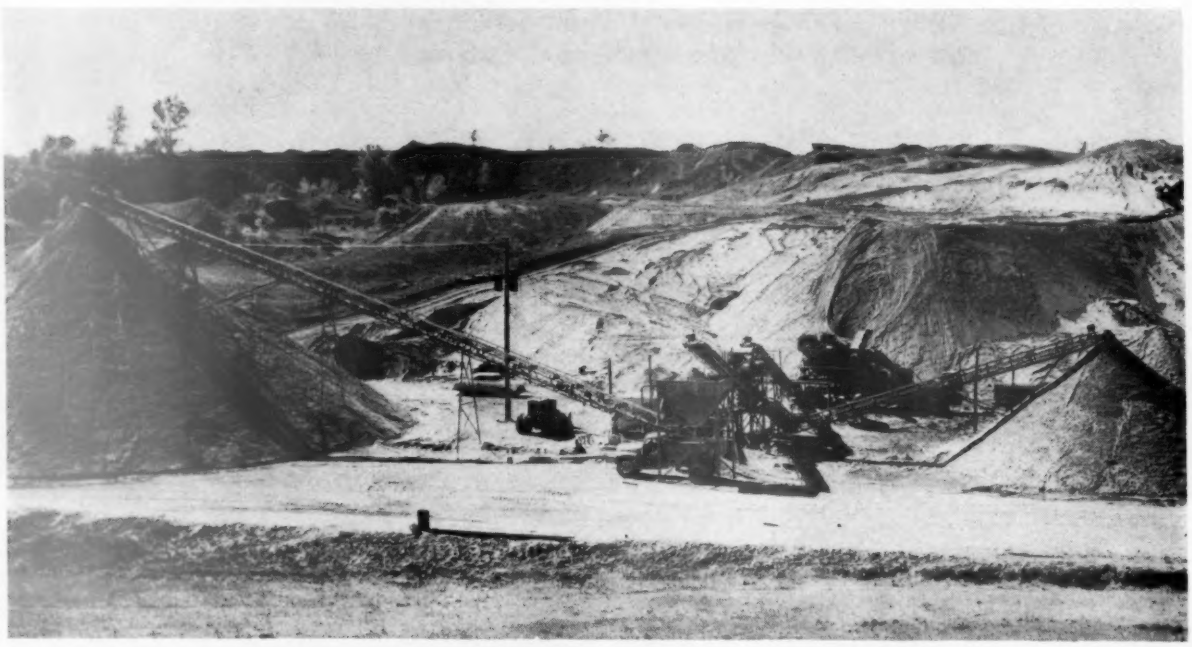


This portable unit serves as a primary phase for operations at two separate pits. Here it is in operation on the Eagle Sand and Gravel Company's property west of Sioux Falls. Material drawn from the truck-loading bin is hauled to the stationary secondary installation.

Small Operator BIG *in Ability*

• Operating economy, deleterious material, feed control among problems solved by progressive s-g producer

By BUREN C. HEROD



An overall view of the stationary secondary phase of the West Plant. Formerly fed by a dredge, this installation now receives dry material from the portable plant, and water is added in the feed box preceding the jig, upper center. At the left are the jigged gravel bins, and behind those the sand bins.

ANOTHER ON THE SPOT report

OPERATIONS such as that of Eagle Sand & Gravel Company, Sioux Falls, S. D., make up the backbone of a sound, steadily growing sand and gravel industry. Although the group consists of firms with facilities considerably less extensive than those of their larger contemporaries, they rank equally high in progressive attitude. Size is only a matter of degree. To be successful, whether of average or high capacity, a firm's management must be "on the ball" in solving problems found in raw material, operating, and service.

Like most of his colleagues, Robert Bruns, president of Eagle Sand, has encountered a number of difficulties in those areas and in overcoming them he has displayed the typical reliable producer's determination to deliver a top-quality product from an efficient production unit. Among the problems which have been solved in the Eagle operation are a deleterious fraction in one raw material source, control of feed to a specialized processing phase which eliminates that undesirable material, and developing a 150-t.p.h. operating unit that would permit working separate sites with the most economical plant investment.

The company was organized in 1939, and the first plant built was supplied by a dredge in wet-pit operation. By 1947 the first area had been worked out, and the second plant, also supplied by dredging, was set up on another tract. In 1958 operations were expanded to incorporate a portable primary plant, dredging was subsequently abandoned, and the older plant (fitted earlier with beneficiation equipment) was relocated in being set up as the secondary or finishing phase. These facilities, just west of Sioux Falls, are referred to as the West Plant. Last year a new sand plant, known as the Cactus Hills operation, was built on a property on the east side of the city, to round out required raw materials.

Various factors in the above projects met specific objectives. One of the most significant relates to the deleterious constituents in the deposit from which the West Plant is supplied—including chert, shale, ochre, and pyrites. In the face of increasingly tighter specifications, upgrading was mandatory. Various systems of beneficiation were investigated, and since plant capacity did not warrant the large investment in heavy media processing equipment, a jigging unit was installed.

While it corrected one problem, the installation was paralleled by the development of certain drawbacks in the existing dredging operations. Two factors were involved —too many pyrites were being pulled up by the dredge for the jig to handle efficiently, and the dredge discharge was not amenable to the desired degree of jig feed control. Therefore, dredging was abandoned in favor of dry-pit excavation methods.

The deposit for the West Plant provides good raw material for gravel, concrete sand, and a combination pit-run and crushed product that is popular in the area. However, the need for a broader range of sand to accommodate both concrete and mason's sand requirements led to the acquisition of the Cactus Hills tract. Again, meeting one objective posed a corollary problem —in this case the feasibility of investing in complete stationary installations on both properties.

Since the sites are complementary and neither would bear the full load of supplying all materials marketed, it seemed that complete stationary

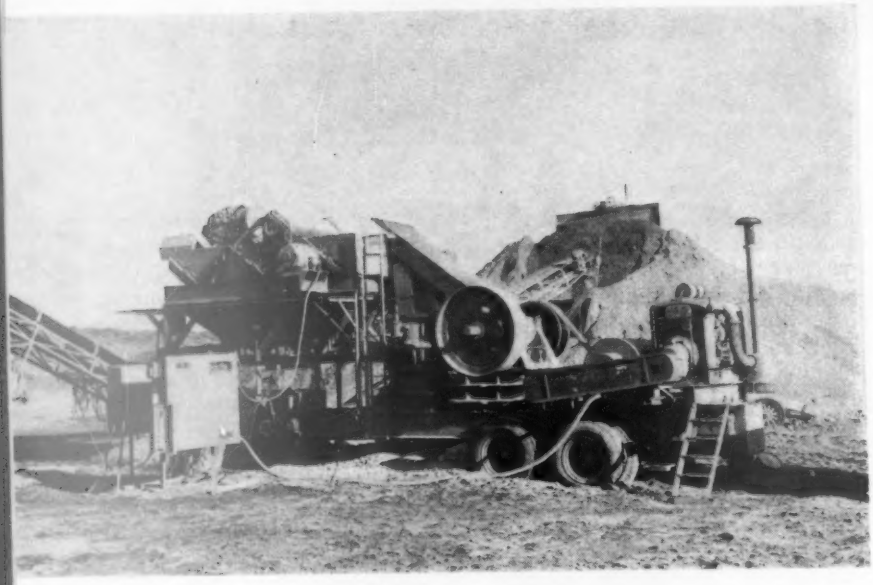
Opposite page:
At the Cactus Hills pit the portable primary, background, furnishes direct feed to the stationary secondary installation, center, involving screening and classifying units. At the left is the stockpile of concrete sand, and at the right the mason's sand stockpile.

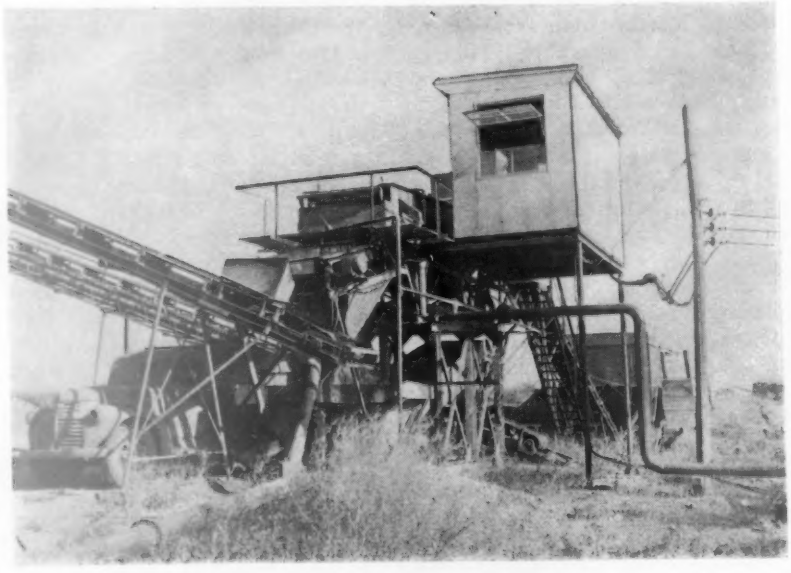
At either location, the portable primary is fed as shown here in a pit view at the West Plant site. The bulldozer blends material from coarser and finer layers in the deposit as it pushes feed to the conveyor hopper.

plants at both locations was an unnecessary duplication. Some degree of portability was obviously the best solution. It was carried out with the design by Mr. Bruns and construction by company personnel of a portable unit that functions as a primary for the stationary secondary plant now installed on each operating site.

At the West Plant, the secondary phase consists of jigging and screening equipment, conveyors, and loading bins; at Cactus Hills the stationary units include scrubbing and classifying screws and stockpiling conveyors.

The property on which the West Plant is located contains extensive reserves in a tract of more than 300 acres. Since dredging has been discontinued, the deposit is now being worked down only to the water table. Pit depth ranges from 12 to 15 ft. In this area the coarser material is in the upper part of the deposit, and the finer is below. A D7 Cat is used to bulldoze the material to the primary plant feed hopper. In the dozing the coarse





Left middle:
A close-up of the portable primary plant which incorporates a screen, a jaw crusher, and a cone crusher. The diesel at the right furnishes the drive for the jaw crusher and also for a generator that provides power for the electric motors on the remaining equipment.

Left bottom:
The primary processing units in the stationary secondary installation of the West Plant are the jig, above, and classifier, below. Jigged gravel is dewatered on a following screen before being conveyed to the final screen above the loadout bins. The finer fractions are processed through the classifier and then conveyed to the sand bins.

and fine fractions are blended together.

This feed is dozed into the hopper of a 30-in. portable Kolman conveyor unit and transferred to the portable primary, which incorporates a screen and two crushers. The flow is received on a 4- by 12-ft. double-deck horizontal Cedarapids screen, which makes separation on 2-in. and 1⅛-in. opening screencloth, top and bottom. The screen is followed by a 1524 Diamond jaw mally the plus 2-in. material from the screen will be chuted to the jaw, and the bottom deck retained fraction to the cone. An overflow chute in the cone crusher feed delivers excess flow to the jaw. Both crushers discharge to a 24-in. belt, and the crusher and a Symons cone. Norcrusher product is then placed on a return conveyor connecting with the main feed belt in closing the circuit.

An International diesel furnishes drive for the feed conveyor, and a GMC diesel mounted on the portable plant frame powers the jaw crusher. The latter diesel also drives a generator which furnishes power for the six electric motors driving the cone crusher and all other conveyors.

Throughs from the bottom deck of the screen are received on a 24-in. belt and delivered to a truck-loading bin. An automatic spill system above the bin places the material on a 24-in. stockpiling belt when the bin is full. The minus 1⅛-in. crusher-run product of the above processing is a popular base material and is truck-loaded at this point for direct shipment. Trucks are also loaded from the bin for transfer to the stationary plant.

With the exception of the truck-loading bin, all of the above equipment is relocated at Cactus Hills when operations are carried out there. The main feed conveyor, as noted earlier, is a portable Kolman unit. Another conveyor has been equipped with running gear and a trailer hitch, and the rest of the conveying equipment is laid on a low-boy. Thus the full installation, along with the company-built primary, is fully portable.

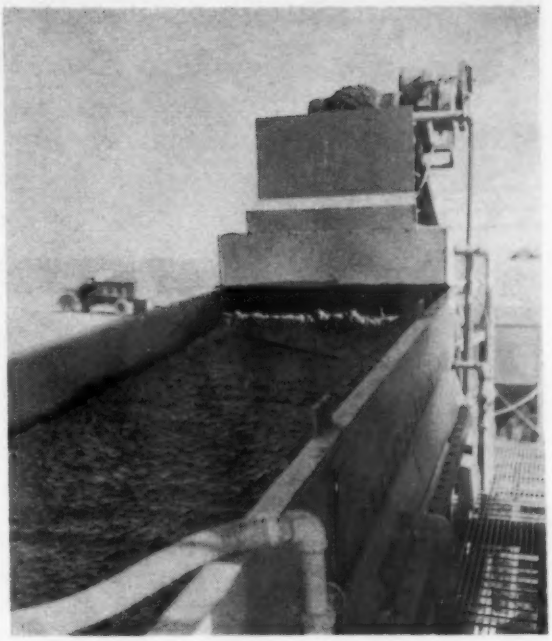
The feed system for the stationary secondary phase of the West Plant was designed for maximum control and simplicity. Trucks from the pit operation dump into a hopper, and the material flowing from the hopper passes through a gate set to put the desired depth on the 24-in. feed belt. This provision, combined with regulation of the belt speed, provides necessary control of the proper amount of feed to the first phase of the secondary plant.

Material is delivered dry by the above belt to a feed box ahead of the jig. Water is added here through a 2-in. line from the old pond at the rate of 250 g.p.m. The slurry flows to the 5- by 12-ft. Wemco-Remer jig, which is said to be the first of its type used in the sand and gravel industry. As received, the feed to this unit contains an average of 4 to 8 percent of deleterious constituents. After jigging, the larger material has only 0.6 percent, and the sand 0.5 percent—far within specification limits.

Jig overflow passes to a 4- by

(*Concluded on page* 131)

Jigging has reduced the percentage of deleterious material in the feed from an average of 4 to 8 down to about 0.5 percent in the finished products.



Below:
Along with supplying its markets with aggregates and road base materials, the company operates a fleet of six ready-mix trucks from this 40-cu. yd. per hr. central mix plant.

The tractor is an International Model R-195, powered by an RD-450 engine. Power is transmitted through a Fuller 5-speed Model 5-A-620, featuring overdrive in 5th gear, and an Eaton 2-speed drive axle.

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"Our tractors average over 100,000 miles per year, consistently hauling 16 to 18-ton loads, and we get excellent performance from our Fuller Transmissions," states Allan E. McGarity, Officer of the Harmony Blue Company, Inc. of Elberton, Georgia. "We feel that the reliability of the Fuller Transmissions has been a major factor in the excellent performance record of our hauling fleet."

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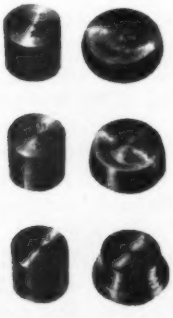

No. 1 E-6010 DEPOSIT—Under pressure it has mushroomed to almost half its original height.

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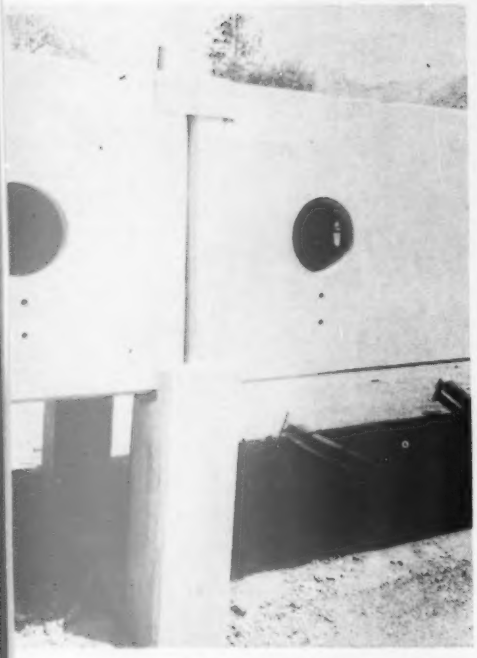


A detail of the support structure, showing a lapped joint, pillars, portholes, and pairs of bolt holes through which the troughing idlers will be fastened.

Prestressed Concrete Conveyor Structure SNAKES DOWNHILL 1½ MILES to New Calaveras Cement Plant

By HARRY F. UTLEY

ANOTHER ON THE SPOT report

BEFORE the year-end, Calaveras Cement Company (a division of The Flintkote Company) is expected to be in full production at its new plant, located about 11 miles north of Redding, Calif. Capacity of the new facility will be about 1,500,000 bbl. annually.

Limestone to supply the chief raw material need will be quarried in the Gray Rocks deposit, high atop a ridge about 2 miles east of the new plant. Among the first tasks undertaken on the project were the opening of the quarry and the installation of a long down-hill belt conveyor to deliver the stone to a surge storage pile near the plant.

The supporting system chosen for the belt conveyor is unique, being composed entirely of structural concrete. The U-shaped prestressed-concrete channels, known as "Calcoveyor," which make up the 1½-mile long structure serve also as a protective cover for the belt, idlers, and material in transit. Designed and patented by the Frank J. Madison Company of San Francisco, the all-concrete system cost considerably less than conventional steel framing with a corrugated-metal cover. Besides, the concrete structure affords an excellent example of a new use for the Calaveras product, portland cement!

After quarrying and primary reduction to minus 8-in. size at the top of the mountain, the stone is discharged to drop vertically *via* an 8-ft. diameter by 500-ft. deep glory-hole. At the bottom of this deep draw, a pan-feeder transfers the material to a belt conveyor operating in a 730-ft. long tunnel blasted out of the mountain. The tunnel conveyor is conventional, and the Calcoveyor installation starts at the transfer point as the belt leaves the tunnel.

There are two Calcoveyor flights, the first being 4,300 ft. long with a vertical descent of 513 ft. More than 80 tons of belting is to be used in the entire system, which is believed to be the longest downhill belt-conveyor ever installed. Drive motors will regenerate about 225 hp.

At a second gravity transfer station, the final Calcoveyor flight, 2,340 ft. long, passes through a tunnel under U.S. Highway 99 and terminates on a bent-supported incline, to build a 65-ft. high stockpile at the plant.

The reverse U-shaped Calcoveyor members are 30 ft. long for the most part. They were cast in the Sacramento yard of the Delta Prestress Concrete Company, Inc., and trucked to the project north of Redding, a highway haul of about 175 miles.

Maximum thickness of the sections is 4 in., and each weighs about 9 tons. Four ⅜-in. steel prestressing strands were employed. Along both sides, 12-in. portholes permit free access to the belt for maintenance. Idlers were bolted into position through holes cored into the members at the time of casting. Idlers, pully and shaft assemblies, and related conveyor equipment were supplied by the Continental Conveyor & Equipment Company. Supporting piers for the structure are also of precast concrete.

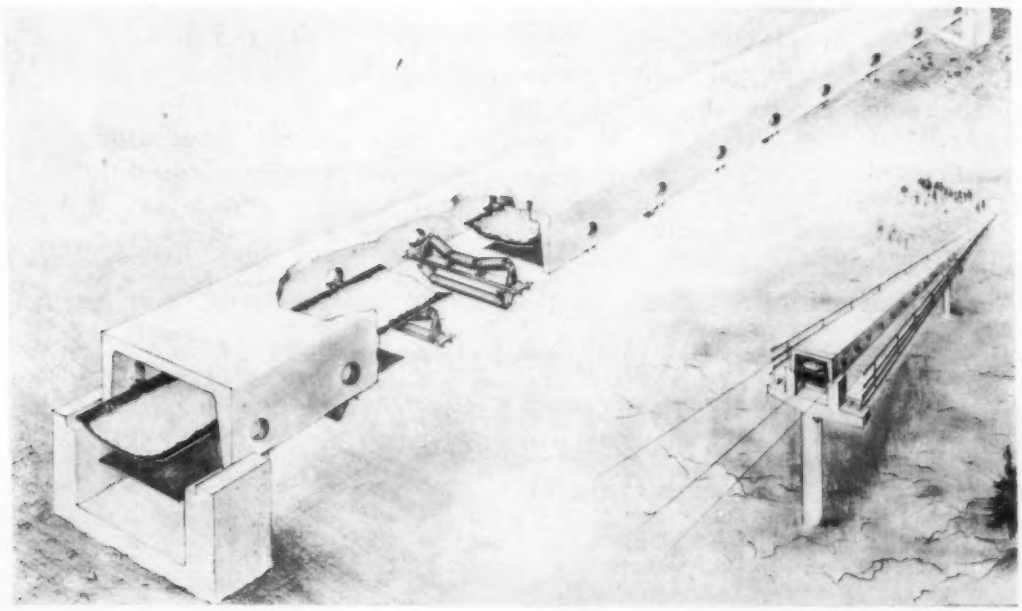
More than 3 miles of belting, all supplied by the Boston Woven Hose & Rubber Division, American Biltrite Rubber Company, is used in the system. The line will carry 484,000 lb. of load and belt, driven at 450 f.p.m., and delivering 600 t.p.h. of limestone to the stockpile.

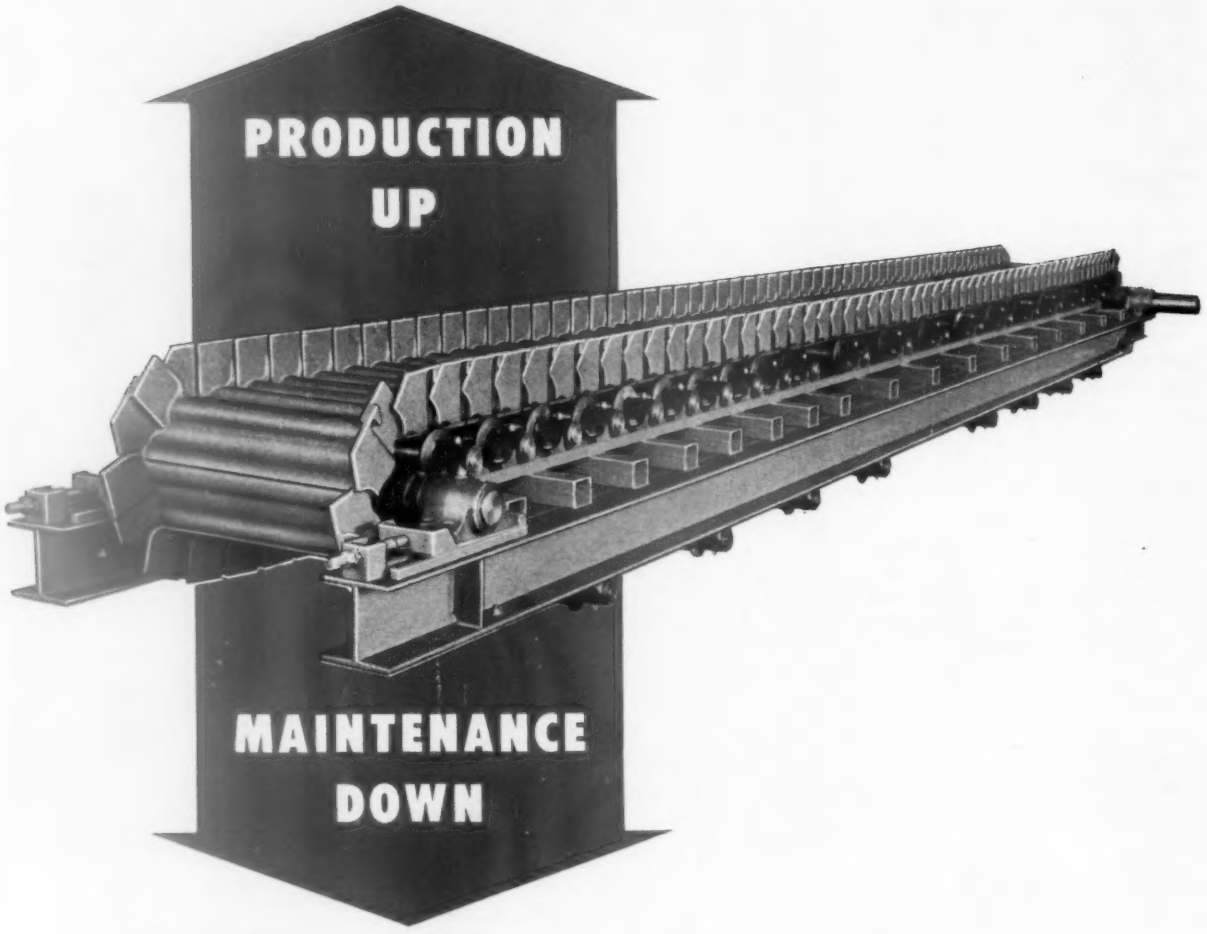
The main down-hill flight will utilize 8,596 ft. of 36-in. 6-ply BostRon belting, while the second flight from the transfer point to the stockpile area will require 4,747 ft. of 36-in. 2-ply BostRon belting. Both belts have Dulon ¼- by $\frac{3}{32}$-in. covers. The adit (tunnel) conveyor will require 1,482 ft. of 36-in. 3-ply belting. In addition, about 3,900 ft. of 18-, 24-, 30-, and 36-in. BostRon belting will be used on individual conveyors serving the crushing area and mill building of the new cement plant.

The new Redding plant, lying in the scenic foothills of the Shasta-Cascade "wonderland," is served by the Southern Pacific Railroad. The plant will be highly automated and initially will include one 425-ft. rotary kiln. Cement produced in the new facility will be marketed in northern California and southern Oregon, supplementing output from the existing Calaveras plant at San Andreas in central California.

A view along the main flight of the conveyor, which leads to the quarry and primary crushing plant in the distance.

This sketch of a section of the prestressed concrete conveyor structure shows how the reversed U-members carry the belting and form a protective cover. Idlers will be bolted into position slightly different from the manner shown here. The bolts actually will pass through the concrete sidewalls. The small sketch shows the type of concrete bents which will carry the inclined conveyor to the stockpile. Prestressed double T's will form walks.





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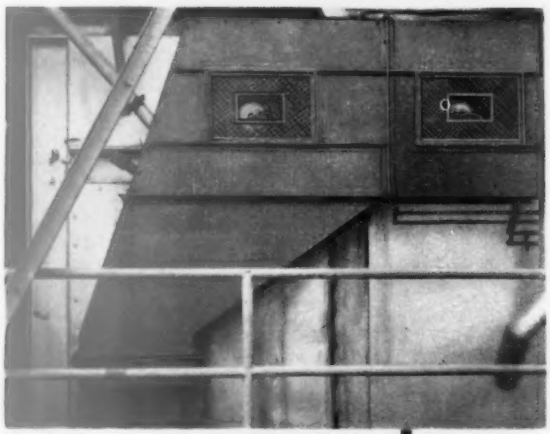

Bronze bearings on inclined grate coolers, when lubricated by hand, usually wore 3/16-inch in about 90 days. When a large cement company installed an Alemite Accumatic Centralized grease system on its coolers, bearing wear was reduced to only .008-inch in four full years of continuous production . . . thanks to the versatility and flexibility of *automatic* Accumatic lubrication.

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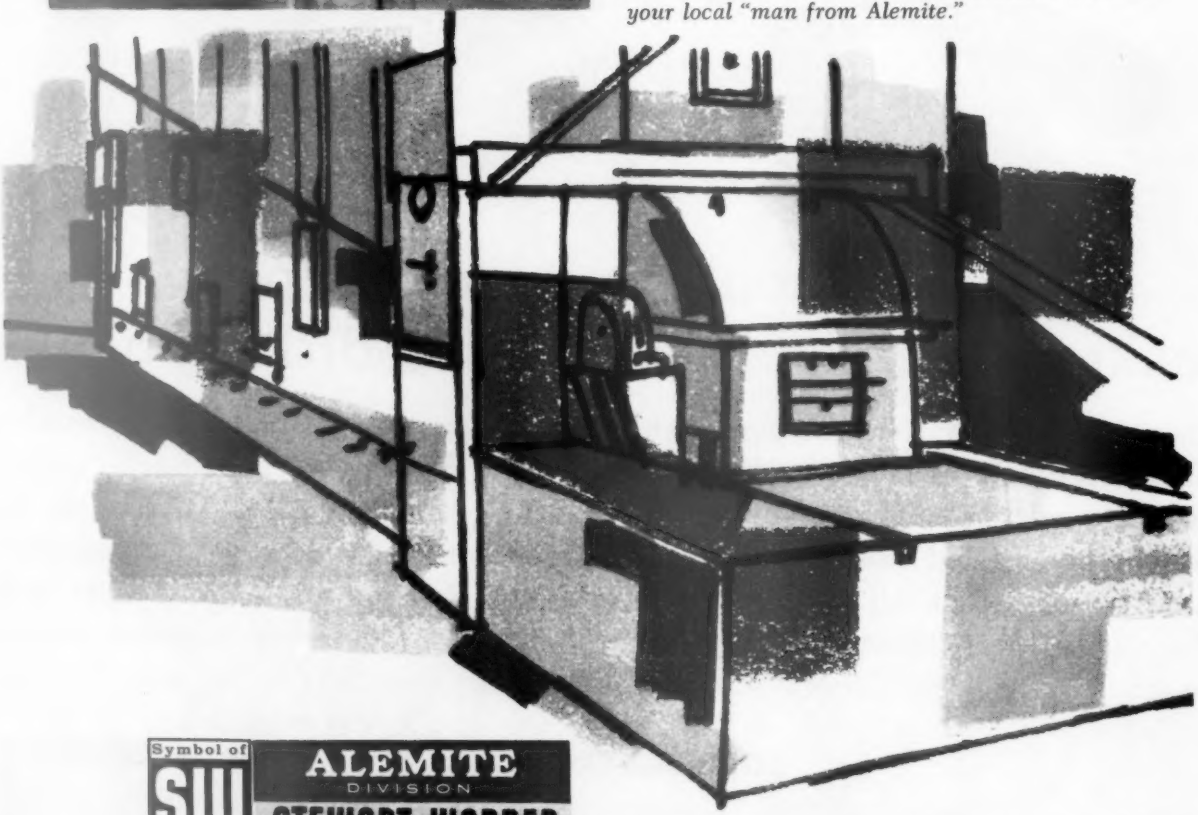

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Drill Maintenance Plan

(*Concluded from page* 105)

to learn the optimum point at which to undertake complete overhaul of drilling rigs, engines, and compressors. To establish the normal life of a diesel engine, some engines were endurance-tested on the job for over 9,000 hours; one test exceeded 12,000 hours.

Results showed metal fatigue to a certain degree after 7,500 hours had been exceeded, and the degree of fatigue increased proportionately with additional service hours. As the result of a final analysis, company management decided on the 5,000-hour mark although an additional 2,500 hours could be obtained from an engine without undue strain. Since customer service is highly important, the safety margin ensured that only top performance drilling rigs would be in the field.

The maintenance program requires a complete overhaul for every engine on a two-year (or 5,000-hour) basis. During operation each engine and compressor is continually protected with a two-in-one dry-type filter which is checked every 500 hours. "The primary element is usually clean at this check-up," Mr. McBride said, "but at the 1,000-hour service period the element is replaced although it may not be necessary." The secondary filter is replaced at the 2-year (or 5,000-hour) service, when the drilling rigs are completely rebuilt.

Careful maintenance is performed on this regular basis. New Jersey Drilling Company management, in an effort to continue high maintenance standards in the field as well as the maintenance shop, uses oil from sealed 5-gal. cans, rather than large drums, to ensure that only clean oil is being used during oil changes.

Service is an integral part of a contract drilling operation with drilling rigs as widely dispersed as those of N. J. Drilling. The rig, with the drill operator and the helper, is contracted to quarry operators for specified time periods based on the number of holes required and the drilling time needed. Such an arrangement relieves the quarry operator of any responsibilities inherent in drill rig ownership such as maintenance, repair, transportation, and restriction of operations because of downtime on a rig.

It was during the development of the maintenance program that four diesel engines were ruined by faulty filters. Two of the engines had been operating for over 3,000 hours; one had been run less than 2,000 hours; and one had been purchased only two months before. It was a severe blow to the company since the rigs were in continual demand, and their availability was sharply reduced by original filter failure.

A Purolator sales engineer was asked for a solution to the filter failure and the two-in-one filter was given its first test by the company. The favorable results brought about an immediate switch on all drilling rigs to the Purolator dry-type two-in-one filter. Manufactured by Purolator Products, Inc., the two-in-one dry-type air filter is designed to provide complete protection for equipment operating under abnormally heavy dust conditions. The unit consist of a large treated paper element which performs primary filtration and a smaller secondary element.

Eagle Sand-Gravel

(*Concluded from page* 123)

7-ft. single-deck Kolman screen for dewatering, and underflow is delivered to another screen for dewatering the "junk." From the first screen, the throughs flow to a 22 x 24 twin Eagle Iron Works screw classifier. Wash water from the jig is also sent to the classifier. Throughs from the junk screen are piped to a disposal area, and the dewatered rejects from jigging are chuted from that screen into a truck for disposal.

The jig product from the first dewatering screen is chuted to a 24-in. belt and conveyed to a 3- by 8-ft. double-deck Kolman screen mounted above a set of two loading bins. Separation is made at ½ in. on the top deck, and $\frac{5}{16}$ in. on the bottom. The largest fraction drops into one bin, and the two smaller into the respective compartments of the companion split bin.

Sand from the screw classifier is carried on a 24-in. conveyor paralleling the gravel belt, and is discharged through a turnhead into a set of four bins. Materials are directly loaded from the bins into trucks for shipment or stockpiling. Rehandling from stockpiles is done with a Trojan front-end loader. Operations of the secondary plant, from feed belt to bins, are regulated by one man from a control house on the jig and dewatering screen tower.

All shipments from the West Plant, consisting primarily of gravel fractions, base material, and concrete sand, are made by truck.

Operations at the Cactus Hill site are quite similar to those at the West Plant, except for the secondary phase and certain revisions to the portable primary. The portable feed conveyor and hopper, and the primary plant are set up in the same manner. However, the range of material in the deposit is such that the lower deck of the primary screen is left open, and the following cone crusher is shut down. Sand is the primary component, and there is only a nominal amount of gravel. Since there is but a trace of deleterious materials, beneficiation is not necessary.

Feed to the operation is handled in the same way as at the West Plant. Minus 2-in. material produced *via* one screen deck and the jaw crusher of the primary unit is conveyed to the first of two screens in the stationary secondary installation. (Should it ever become necessary, a scrubbing unit will be installed between the primary and the secondary phases.)

The first (top) screen of the secondary is a 5- by 10-ft. double-deck Universal unit, currently equipped on one deck only with ¼-in. screencloth. All retained material is placed on a short 24-in. gravel conveyor and carried to a truck bin for delivery or stockpiling. Below the top screen is a 3- by 5-ft. single-deck Kolman fitted with 10-mesh cloth.

From the bottom screen, retained material is chuted to a 48-in. Wemco screw. Minus 10-mesh throughs may be split in any desired proportions to flow either to the above screw or to a 24-in. Wemco classifying screw. For further flexibility, the entire flow of throughs from the top screen may bypass the lower (plaster sand) screen and pass directly to the larger of the two sand

preparation screws. Each of the latter discharges onto a 24-in. stockpiling conveyor. Stockpiled materials are rehandled with a Hough Payloader.

The favorable percentage of fines in the Cactus Hills deposit permits making top-quality concrete and mason's sand—or various blends—plus some gravel. Currently, all shipment from Cactus Hills is by truck, but plans have been made to handle rail equipment.

The two operations, although regarded as unpretentious by the owner, are efficiently simple and they very capably handle the job they were designed to do. Production is handled by a 6-man crew for both locations under the general direction of Bob Bruns and the direct supervision of Harold Schipper, foreman. The office manager is Seth Anderson.

About half of the firm's output is marketed to an active farm trade. The balance is utilized to supply customers for use as road base and concrete. In supplying the latter, the company operates a fleet of six trucks from a 40-cu. yd./hr. central mix plant.

Canadian Firm's Subsidiary To Run Lime Plant in Tacoma

Management of the Dominion Tar & Chemical Company, Vancouver, B. C., has announced plans to construct a $2,500,000 lime plant at Tacoma, Wash. The new facility is to be operated by Gypsum Lime & Alabastine, Ltd., a subsidiary.

The Canadian firm operates a limestone quarry and a lime plant on Blubber Bay (Texada Island), and another lime plant on Granville Island, both off British Columbia.

Corvallis Sand and Gravel Marks 50th Anniversary

The 50th anniversary of Corvallis Sand and Gravel Company, Corvallis, Oreg., was celebrated on August 2. On this occasion a fountain for the city park was presented by the firm's president, John H. Gallager Jr., to the city's mayor. Open house and tours of the plant were held during the day.

The company was founded in 1911 by J. H. Gallagher, who was president until 1960. The present plant has been occupied since 1922. Facilities include a gravel plant, an asphalt plant, and a ready-mix department.

The firm has grown from five employees in 1911 to 70. Yearly sales have skyrocketed from $15,000 to over $1 million in 1960.

Louis Ware Scholarships Won by 6 Mining Students

Six students at leading mining colleges have been named winners of the 1961-62 Louis Ware senior-year scholarships. The $1,000 awards are sponsored by International Minerals & Chemical Corporation, Skokie, Ill.

The winners are: Thomas Tisone, Colorado School of Mines; John N. Johnson, Michigan College of Mining and Technology; William Hustrulid, Minnesota; David Delling, Missouri School of Mines; S. David Irons, Pennsylvania State; and Thomas Mika, Stanford.

The six winners are eligible to compete for a $3,000-a-year, three-year fellowship. The program is named in honor of the I.M.C. board chairman, who was president of the company for 20 years.

4 Meadows Boys Are Safe At Superior Stone Co. Plant

Four employees of Superior Stone Company's New Bern (N. C.) quarry have received the company's top award for no lost-time accidents requiring medical attention over a five-year period. The perfect five year award—a wrist watch—was presented to James W. and Allen B. Meadows, brothers; and Delbert W. Meadows and Samuel H. Meadows (not related).

Superior Stone Company, a division of American-Marietta Company, has its headquarters in Raleigh.

The new technical center of Kaiser Refractories and Chemicals Division, Kaiser Aluminum and Chemical Corporation, completed last spring at Mexico, Mo., was dedicated recently at the site.

Enter 132 on card, page 177

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From Chevrolet's broader-than-ever 1962 lineup of trucks for every kind of hauling job comes a full roster of better-than-ever light-duty models, specialists at trimming tough jobs down to size in short order. Here are new models and new power choices to meet a wider range of working needs, plus a trim new look for all conventional models that gives you safer seeing down the road! Now it's easier than ever to get Chevrolet's traditional thrift and dependability going for you, in the model tailor-made for your kind of job. There are work-loving pickups in a full range of sizes and weight ratings, in sleek Fleetside and handy Stepside styles, plus sensational Corvair 95 Rampside and Loadside models built to outwork anything in their class. In addition, there's the biggest choice ever of *choice* delivery models, including smart, fleet-stepping panels, high-capacity Step-Vans for every job up to 10,000 lbs. GVW, and the wonder-working Corvair 95 Corvan. For specialized requirements there are sturdy stake models and chassis-cabs in every size and weight class, rounding out a selection sure to include a better way to do *your* job! Why not see your nearby Chevrolet dealer for full details on the model made for you, and start finding out right away how much better business can be. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

NEW EASY-VIEW STYLING—For 1962, all conventional pickups, panels and Suburban Carryall models ride in with trim new look-ahead lines, featuring a new hood design sloping lower at the front to let you see the ground as much as 8½ feet closer. Safer, easier viewing results! Also, there's a handsome new grille, new custom exterior trim, and sparkling new colors. Inside, too, things are looking better for the man at the wheel, with new easy-to-live-with colors and tough good-looking upholstery.

NEW STEP-VAN 7—Here's good news—211 cubic feet of it!—for light-duty delivery operators with high-bulk lading problems. And Chevrolet's new Step-Van 7 is built to give your bulky loads a better ride, too, on the years-ahead Independent Front Suspension chassis design that's revolutionized the conventional truck field. With the big-saving High Torque 235 Six under the engine box, there's plenty of power to take your tightest schedules in stride, and a long list of better built body features adds up to easy work and extra-long working life.

NEW HIGH TORQUE POWER—New wider power choice for '62 lets you match your job needs better than ever, in all conventional pickup, panel and Carryall models. There's the standard-equipment 235 Six, cornerstone of the Chevrolet reputation for unbeatable operating economy, and the spirited, ultra-efficient 283 V8 for premium payload punch. *And now, in addition, the heavy-duty 261 Six is available at nominal extra cost, offering an extra measure of stamina and durability to keep on delivering in the roughest, toughest kind of duty.*

JOB-TESTED CORVAIR 95's—They've got a year of enthusiastic acceptance behind them and they're still the talk of light-duty trucking! Chevrolet's sensational Corvair 95 models, in two pickup styles and the spacious Corvan, have set new standards for space and weight utilization in the half-ton field. With a roomy driver compartment up forward and the compact, perky 145 Six tucked under the load floor at the rear, the space between goes to work in a way conventional designs can't match. And, to top it off, this new way to work comes in as pretty a package as ever came down the pike!

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Use this convenient ordering coupon to get descriptive literature and specifications on new 1962 Chevrolet trucks to match your job. Just check what you would like, fill in your business address and mail to: Chevrolet Motor Division, P.O. Box 7271, Detroit 2, Michigan.

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59

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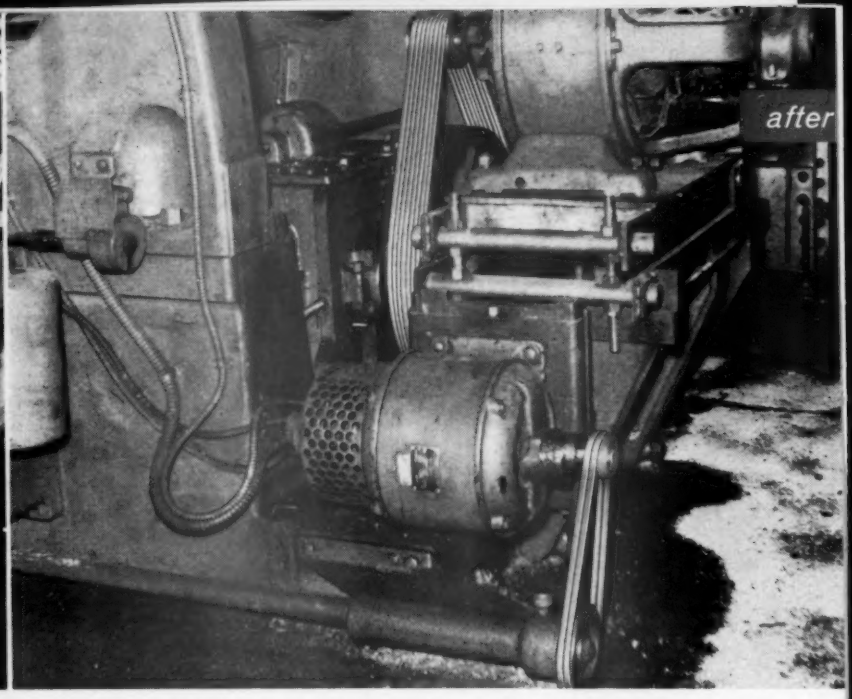
1962 CHEVROLET JOBMASTER TRUCKS

CHEVROLET

Gates Industrial News



Gear drive caused chatter marks on parts

Gates Super HC High Capacity Drives replace gear and flat belt drives

GATES SUPER HC DRIVE REPLACES GEAR DRIVE IN LIMITED SPACE...

ends costly rejects

Chatter marks on parts produced by a vertical boring mill at Manitoba Bridge and Engineering Works, Ltd., in Winnipeg resulted in costly rejects. The cause of the chatter marks was traced to the gear and pinion on the main drive.

About a year ago, the plant engineer investigated the possibility of replacing the gear drive with a flat belt or conventional V-belt drive. However, to do the job, both types of drive had to be too large to fit into the limited space available.

Advised by a Gates Representative, he then designed a Gates Super HC High Capacity Drive for the boring mill. He found that the high capacity Gates Drive was so compact that it could readily transmit the required power in the space vacated by the gears. Now, with the smooth-running Gates Drive, the mill is turning out clean, even cuts, eliminating chatter marks.

The Gates Fieldman located near you is a drive design expert. To contact him for help in designing a new drive, or for quick delivery of replacement V-belts, call your nearby Gates Distributor.

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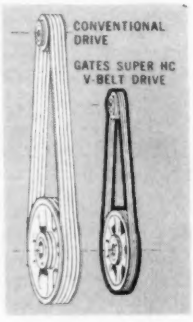
Designing a new Drive?

Gates High Capacity Drive saves space and money ... cuts bearing loads



When you design a new drive or replacement drive, you can save space, weight and money by using a Gates Super HC V-Belt Drive—the first and most advanced high capacity drive. Because of exclusive design features, this new Gates Drive can often transmit the required horsepower in about half the space needed by a conventional V-belt drive—with fewer belts and smaller sheaves.

Drive costs are reduced as much as 20%. Drive weight is reduced 20% and more. Guards and machine housings can be smaller, shafts shorter. Reduced weight and overhang on bearings cut bearing loads. Moreover, the Gates Super HC Drive can operate at belt speeds up to 6,000 ft/min without dynamic balancing!

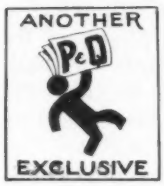
Need replacement V-belts?

Why Gates Hi-Power V-Belts are industry's No. 1 choice today

The exclusive construction features of Gates Hi-Power V-Belts—Concave Sides, (U.S. Pat. 1813698) Precisely-Engineered Arched Top, Flex-Bonded Tensile Member—make them more dependable than ordinary conventional V-belts, giving you far longer belt life on even the toughest applications.

Moreover, because of Gates high standards of quality control, you get a perfectly matched set of Hi-Power V-Belts every time—every belt pulls its share of the load throughout the long service of the drive, further increasing belt life.

What you should know about AGENCY LAW



By G. T. MEDLOCK
Attorney at Law
Member, U. S. Supreme Court Bar
and
R. D. STEVENS
Management Consultant
Washington, D.C.

THE RULES of law concerning the relationship of principal and agent are of considerable significance; and they affect the lives of most management executives in the nonmetallic minerals industry. This is due to the fact that most people earn their living either in the capacity of a principal or an agent. Thus, a failure to acquire a knowledge of the law of agency may result in financial loss. On the other hand, if you fortify yourself with the basic rules of law governing the relationship of principal and agent, you are in a better position to protect your rights and to avoid possible liabilities in handling your company's business transactions.

You should be cognizant of the fact that when you enter into the relationship of principal and agent, whether you are the principal or the agent, you acquire certain rights and assume certain duties and responsibilities. You should know that your rights and duties do not end with the person with whom you have created this relationship; rather, in most instances, as a result of the relationship, you may create rights and duties to a third party—one who is not involved in the agency contract. It is therefore very important that you understand thoroughly the nature of the rights and duties created between the principal and the agent by the agency contract, and also the nature of the rights and duties to third person, resulting from the creation of the agency contract.

In order to understand the nature of the relationship that exists between a principal and an agent, it is necessary to distinguish between that relationship and one that exists between an employer and an employee.

Principal-Agent Relationship The agent represents the principal in the negotiation of contracts with third parties, acting in a representative capacity for his principal. Both contract and tort law are involved in carrying out the duties and responsibilities of agents.

But where the relationship of employer and employee exists, the employee is employed to perform purely mechanical or manual acts and services for his employer. The employee is either directly or indirectly under the control of the employer. The employer instructs the employee as to the methods and means of carrying on his work. Clerical workers, and plant workers are good examples of employees.

If an employer employs an independent contractor to perform a job or produce a certain result, the means and methods used in performance of the job or accomplishing the result are up to the independent contractor. In short, the control over the means and methods of doing the job or accomplishing the result is vested in the independent contractor.

Contract Factors Usually the relationship of principal and agent is created by a contract. The principal and the agent enter into a contract wherein the principal agrees to employ the agent and the latter in return agrees to serve as agent for the principal.

Of course, if an agency is created by contract, the requirements of a valid contract must be met. There must be a meeting of minds between the principal and the agent; they must have legal capacity to contract; a consideration must exist; and the objectives of their contract must be legal. Moreover, if the contract is to extend for a period longer than one year, the agreement must be in writing, to be enforceable.

Types of Agents From the standpoint of the authority of the agent, there are two types or classes of agents: general and special. If, under the agency contract, the principal authorizes his agent to exercise broad general powers, the agent is said to be a general agent. If the agent is employed to perform a particular act for the principal or is endowed with limited authority, he would probably be considered a special agent. The third party must know or find out whether he is dealing with a general or a special agent, since the authority of the agent to bind the principal depends upon the authority the principal has given the agent.

Agent's Authority In general, it may be said that the authority of the agent to bind the principal may be express or implied. The express authority of the agent is the authority which the

← Enter 136 on card, page 177

principal actually gives him under the agency contract. In addition to this express authority, the agent has the implied authority to do whatever is reasonably necessary to carry out the express terms of the agency contract.

Duties of Agent The agent owes certain duties to his principal. If he fails in any of these duties, he is liable by way of damages to his principal. Among these duties are the following:

1. **Obedience to the instructions of his principal**—The law requires him to follow the instructions of his principal since the only authority he possesses to act for the principal comes from him. Any intentional deviations from the instructions given him by his principal is perilous to the agent; they may cause him to be liable to his principal in money damages. An agent has no authority to substitute his own judgment for that of his principal. Although the agent may deviate from his principal's instructions in good faith, his good intentions will be no defense.

2. **Exercise of reasonable care in performing his duties under the agency contract**—If he fails to do this, he is liable to his principal for any damages the principal suffers as a result of his failure to use reasonable skill and care. The degree of care and skill required of an agent is that ordinarily rendered in similar transactions made by similar agents.

3. **Acting in good faith**—This requirement is due to the fact that the relationship between the principal and agent is fiduciary in character—meaning the relationship is one of trust and confidence. He, the agent, must be loyal to his principal in transacting business for the latter. If his personal interests conflict with the interests of the principal, the latter's interests, not his own, must come first.

4. **Ability to give an accounting at any time**—If, under the contract, the agent agrees to devote his full time to the work of his principal, he must account to the principal for any profits received by him from any other sources if such were earned on his employer's time.

The law also requires the agent to keep accurate accounts and to keep his principal's property and money separate from his own. This requires that he may not commingle his principal's money in his personal bank account. If he does deposit his principal's money in his own personal account at a bank and the bank fails, he is required to account for the full amount due to the principal.

Duties of Principal Among the duties the principal owes to the agent are the following:

1. **Observance of contract**—Since the relationship of principal and agent usually arises out of a contract between the parties, it is like any other type of contract; *i.e.*, if either party breaches it, he is liable to the other party for the payment of damages. Therefore, the principal owes a duty to keep his contract with his agent.

2. **Payment of money due**—The principal owes the agent the duty to compensate him for work, according to the terms of the contract. The time of payment and the amount due the agent depend upon the express or implied terms of the contract.

3. **Reimbursement for expenses**—The principal owes the agent the duty to reimburse or idemnify him for all expenses, advances, and disbursements properly made during the course of the agency, and for the benefit of the principal. However, before an agent is entitled to be reimbursed or indemnified, it must be shown that the principal expressly or impliedly promised to reimburse or indemnify the agent. If the expenditure made by the agent results from his negligence or breach of duty, he is not entitled to be reimbursed or indemnified.

The principal is usually liable to third parties for the contracts and torts of his agent. The latter, in dealing with third parties, usually discloses the existence of the agency and identifies his principal. If this takes place, it is said that the principal is "disclosed." On the other hand, at times the agent does not disclose to the third party that he is acting in the capacity of an agent, and, of course, does not identify his principal. Under these circumstances, it is said that the principal is "undisclosed."

If the agent discloses the existence of the agency and the identity of the principal to a third party, and enters into a contract on behalf of his principal, the latter is liable on the contract if the contract is within the scope of the agent's authority. The contract is said to be the principal's contract and not the agent's, since the latter is making the contract for his principal, and not for himself. However, if the contract is not within the scope of the agent's authority, the principal is not bound. The authority of the agent to make contracts on behalf of his principal may be either express or implied.

Other Responsibilities of Principal The principal is liable for the torts of his agent committed within the scope of the agent's employment. A tort is a civil wrong, committed by one party, which results in injury or damages to another; *e.g.*, fraud, assault and battery, duress, and injury or damage due to negligence. However, if the tortious act of the agent is committed outside the scope of his employment, the principal is not liable.

You must know to what extent you are personally liable. When in doubt, always consult with your own company lawyer, whether you are a principal or an agent.

Termination of Contract Finally, the relationship of principal and agent may be terminated in various ways. Many agency contracts provide for termination on some specific date. If the agency has been created to accomplish some particular objective, the agency automatically terminates when the objective has been accomplished.

If either party should terminate the relationship prior to the termination date, he might be guilty of breaching the agency contract and liable for damages to the other party. The relationship of principal and agent is also terminated by the death, insanity, or bankruptcy of either party.

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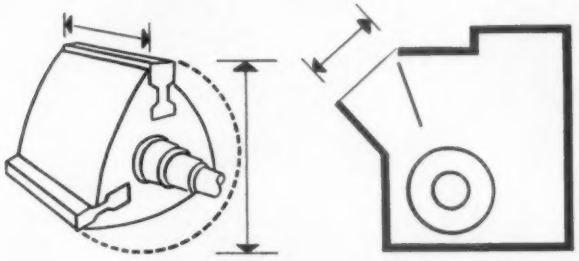

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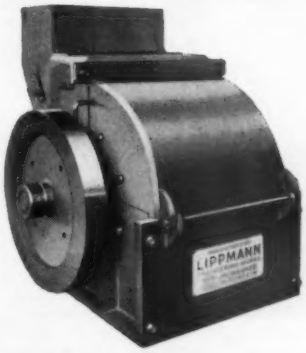

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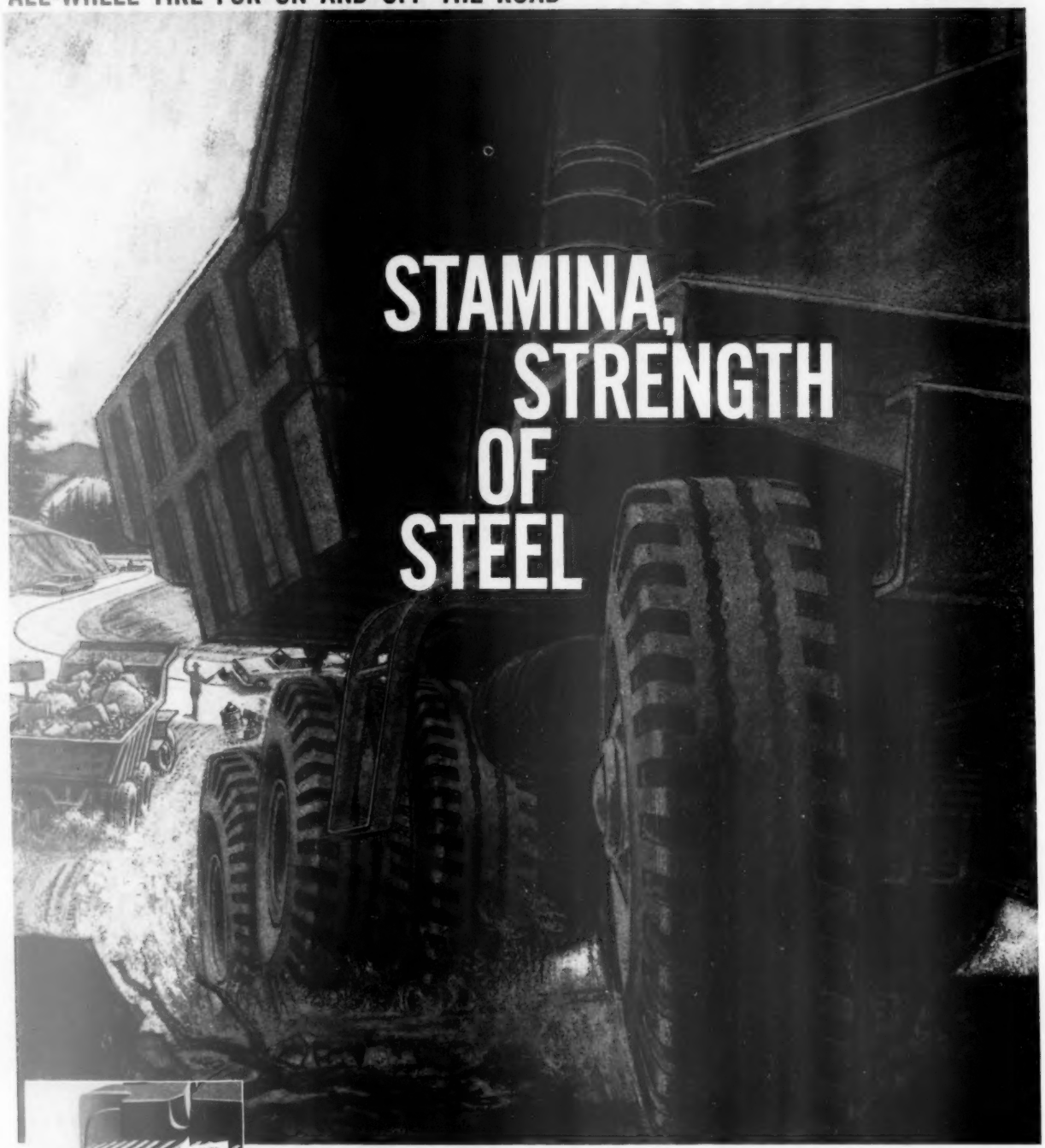

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Legal Decisions
On Industry Problems

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Taxes on Transportation Exempt

A FEW weeks ago a higher court rendered an important decision that a state sales tax law is valid which exempts taxation on transportation services. Also, this higher court held that a company which delivers ready mixed concrete to customers can avoid paying state taxes on transportation or delivery of the concrete by keeping separate the accounts for the concrete and the charges for transportation.

For illustration, in *Clarion Ready Mixed Concrete Company* v. *State Tax Commission,* 107 N. W. (2d) 553, the validity of a usual state law was litigated which exempts transportation services from taxation. This higher court held that the seller of ready mixed concrete can avoid paying taxes on services for delivering concrete if it carefully and strictly follows certain legal rules.

The testimony showed that the Clarion Ready Mixed Concrete Company is engaged in the retail sale of ready mixed concrete. Its plant is situated on the railway right of way. There, mixer trucks owned by the company are loaded with necessary materials kept on hand to make concrete. Further testimony disclosed that mixer trucks of a special type are driven under a loader at the plant, and a prepared batch of measured material is dumped into a drum mounted on the truck. This drum is driven by a separate motor, and the batch is immediately mixed at the plant. After the ingredients—sand, fine material, rock, cement, and water—have been mixed for some "five or six minutes" at high speed, the driver pulls out to make the delivery. The drum is kept revolving at slow speed during the trip "to keep it stirred up," and especially to avoid getting "flat spots" on the "rollers" when the load bounces up and down during transportation. Nothing is done to the mixed concrete in transit or upon delivery except for a little added water if the mix is too dry to suit the customer. The price of the ready-mix during the period involved varied between $13 and $14 per cubic yard.

An official of the Clarion Ready Mixed Concrete Company testified that when a customer or other person called to ask, "How much is concrete?" his answer would be, "$13 a yard, plus delivery." When they want to know as to the cost of delivery, he asks, "How far out do you live? For ten miles it is 70 cents for the first two miles, and then it is 12 cents a yard mile for the next 8 miles."

The tax commission argued that no sale is in fact consummated or intended until the ready mixed concrete is delivered to the customer, and that until such time delivery costs are but a part of the expense to the retailer in making a sale of tangible personal property. And further, as the total charge is a part of the gross receipts, it is taxable.

However, the lawyer for the Clarion Ready Mixed Concrete Company proved that the transportation charges were separated both in the company's books and on the invoice to the consumer. Therefore, the higher court held that it need not pay the state's tax on the cost of the transportation. The court said:

"The record amply supports the lower court's finding that the ready mixed concrete was sold and charged as an item of tangible personal property, and that transportation service in the form of delivery of that property was also sold and separately charged to the customer."

In this case, the Commission's argument was that any transportation charges incurred prior to the delivery of the ready mixed concrete are part of the gross receipts from the sale and are taxable. In other words, it was contended that until the concrete is delivered, no sale has been made. In answer to this argument, the higher court said:

"The argument is ingenious but not very persuasive when we consider the real legal issue involved. When they are separable from the tangible personal property being sold and, by agreement of the parties, are charged as separate items of sale, there can be little question but that by the specific language of the statute they are exempt from the sales tax."

For comparison, see *City of Ames* v. *State Tax Commission,* 71 N. W. (2d) 15. In that case no separate charge was made for transportation service, but merchandise purchased was sold f.o.b. and the delivery or transportation charge was included in the quoted selling price.

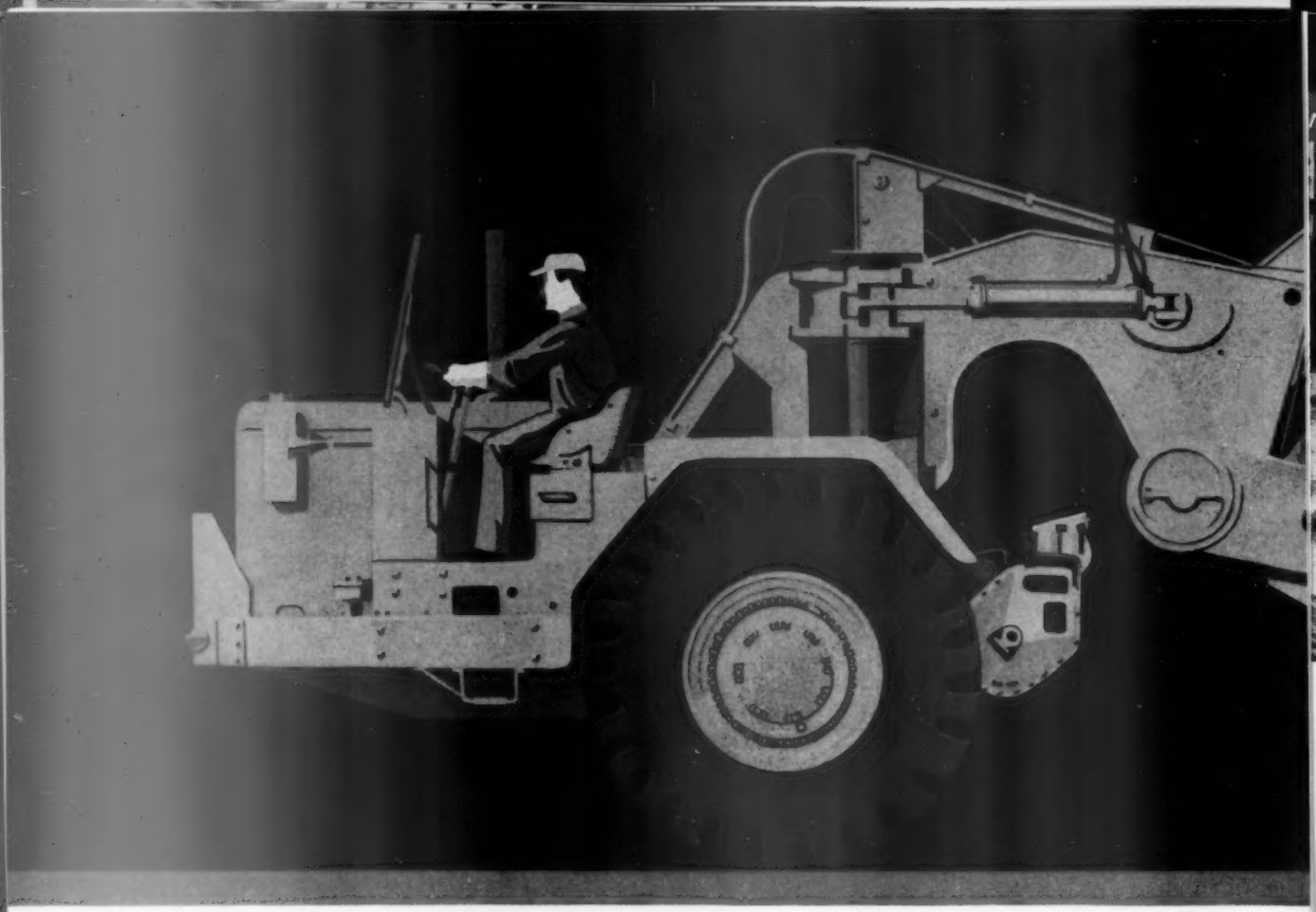
The court held that the tax must be paid upon the entire purchase price.

Two Recoveries for Disability

Last month a higher court rendered an unusually important decision to the effect that the settlement of a law suit for disability caused by silicosis is not a bar to a subsequent claim for workmen's compensation for this disability, where the legal right to workmen's compensation did not exist at the time the suit was filed.

For example, in *Bartley Company* v. *Johnson,* 344 S. W. (2d) 375, an employee named Johnson filed suit against his employer to recover damages for disability caused by silicosis allegedly incurred while employed by the firm. The suit was dismissed after a settlement was agreed upon, and for an absolute release of damages the employer paid Johnson a certain amount of money. This release specifically freed the employer from "all liability by reason of claim or claims for silicosis previously sued for."

Then Johnson resumed his work with the same employer for one year. At this time he filed an application for compensation under the



NEW, IMPROVED CAT 619...SERIES C...ALL NEW 4-CYLINDER ENGINE... 24% MORE HORSEPOWER...COMPACT...ECONOMICAL...CHOICE OF POWER SHIFT TRANSMISSION, DIRECT DRIVE...COMPLETE UNIT CONSTRUCTION...EASY SERVICING...NEW TIRE SIZE...AIR ACTUATED, LIVE POWER CABLE CONTROL...IMPROVED 18 YD. (14 YD. STRUCK) SCRAPER.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

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ADVANCED AS TOMORROW
—CERTAIN AS YESTERDAY

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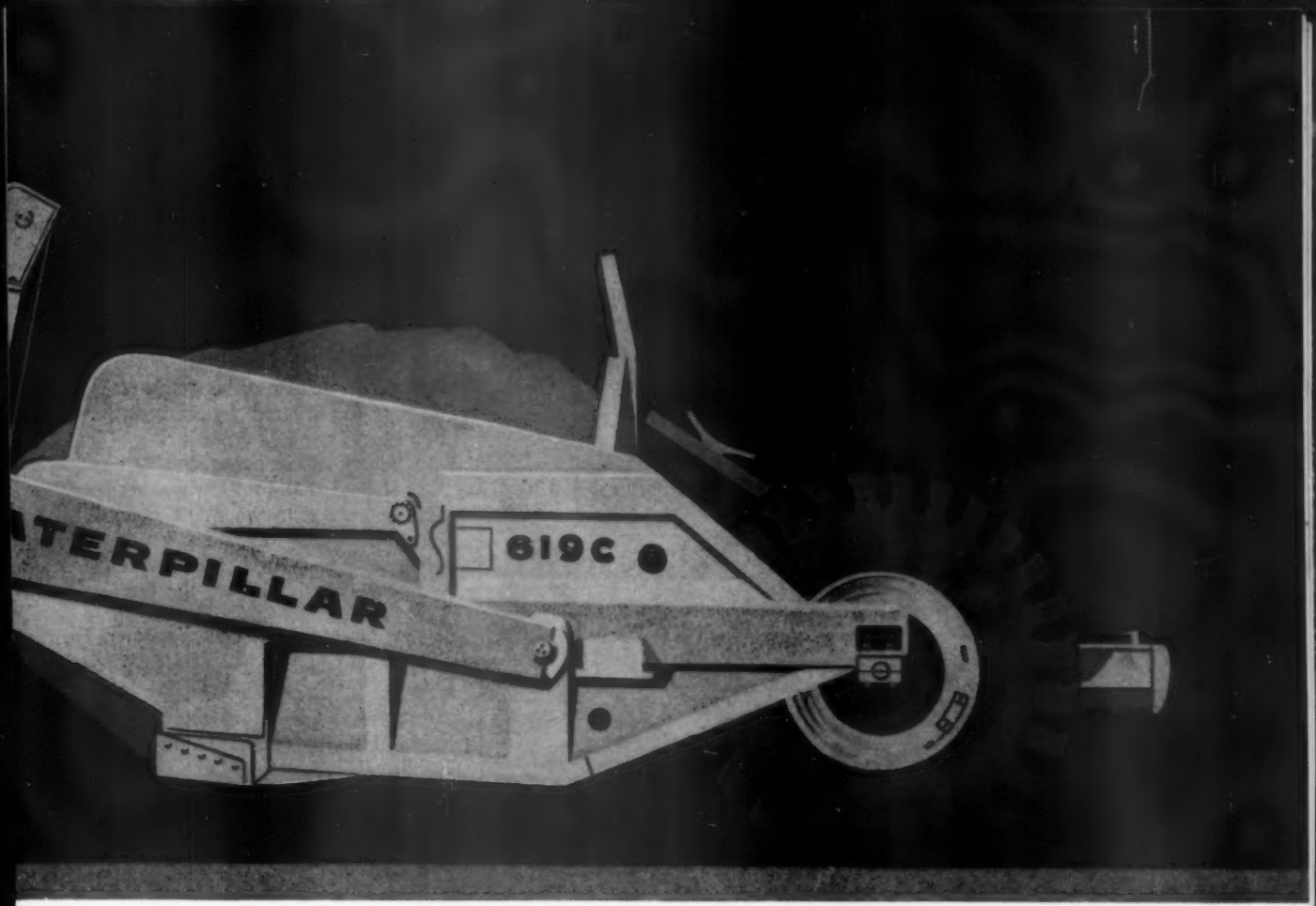
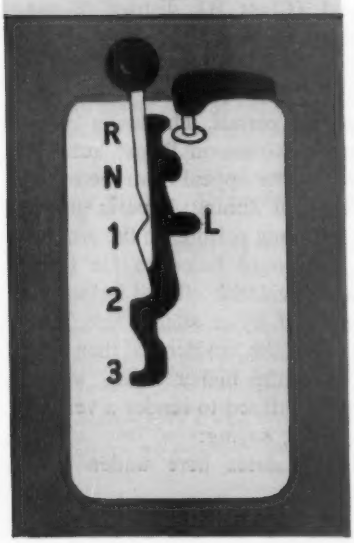
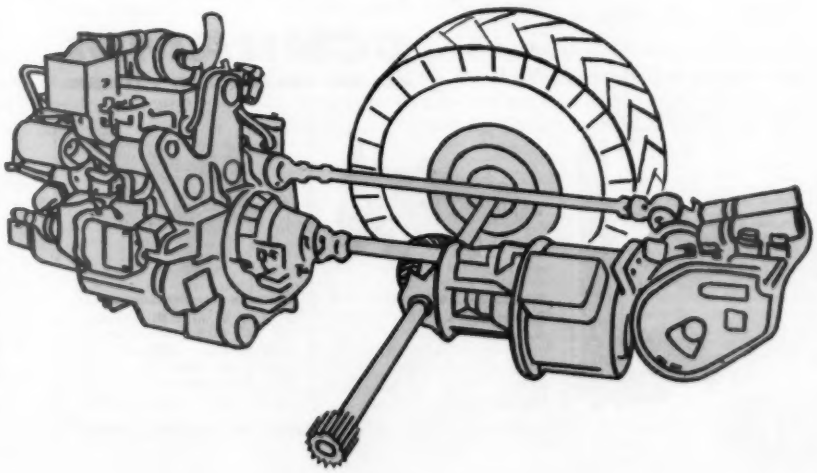


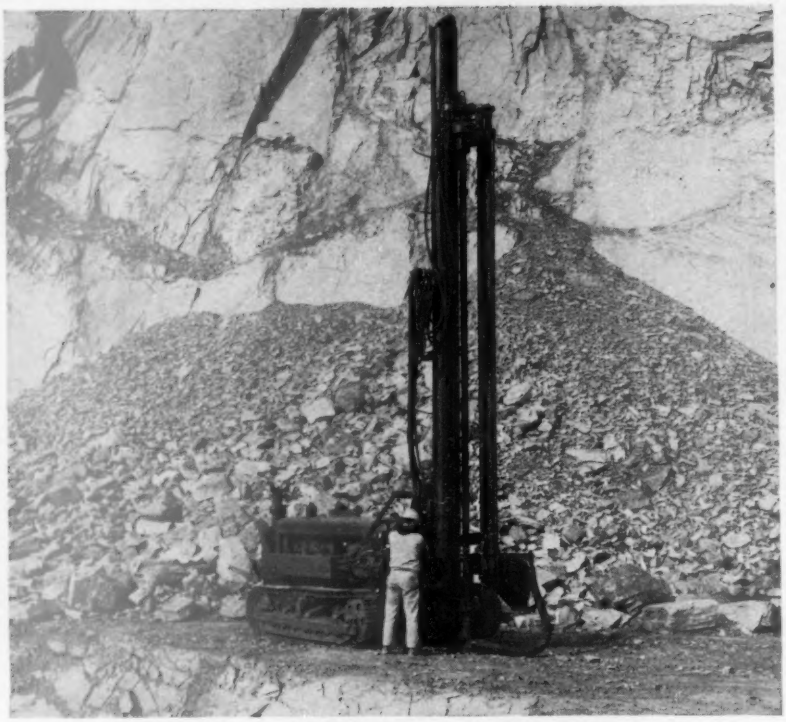


New 280 HP 619C offers choice of power shift transmission for faster, easier operation or direct drive transmission. Air actuated, live power cable control reduces operator effort. New, bigger 26.5 x 29 (22 ply) tires improve roadability. Top speed: 30 MPH. Capacity of matching Lowbowl scraper: 18 cu. yd. heaped, 14 cu. yd. struck. Also available: 25 ton PR619 Rear Dump Trailer built by Athey Products Corp.

New power shift transmission provides 9 speeds forward with just 3 shifts. One lever gives operator instant selection of 3 speed ranges . . . dial indicator tells him **when** to shift. Within each speed range, transmission **automatically** shifts to torque divider drive, direct drive or overdrive to match job conditions. The 619C with power shift transmission always operates at the right speed and power for the job at hand.

New, more powerful Cat D340 Engine (280 HP maximum, 250 HP flywheel at 1900 RPM). This economical 4-cylinder engine burns No. 2 fuel oil . . . has parallel-ported dual intake and exhaust valves and overhead camshafts for most efficient operation . . . has pressure ratio controlled turbocharger and aftercooler. Swingaway dash and pivoted crankcase guard simplify servicing. Unit construction assures easy servicing: engine, transmission, planetary final drives can be removed without disturbing adjacent components.





Here's how to chip away at those High Operating Costs...

BUILD A TASK FORCE OF SCHRAMM CO-ORDINATED AIR-POWER

SCHRAMM ROTADRILLS are gluttons for work . . . and the result is up to two-thirds savings in drilling costs. ROTADRILL is self-propelled, sets up easily, ready to go in minutes. Furnishes its own air for rapid chip removal, dewatering and blockage breaking. Lazy-Susan pipe-rack holder makes changes faster, safer. One man can move the machine, drill, change steels, without assistance.

SCHRAMM has designed an entire line of air equipment to give more total work capacity in fewer units. ROTADRILL is just one example. A good hard look at your whole air-power picture will reveal many areas where old, bulky, inefficient equipment simply cannot give you competitive performance. Plan now to build a task force of modern, SCHRAMM air-power equipment.

Why not arrange for a demonstration at your SCHRAMM dealer's or write for full information on the benefits of co-ordinated air power. SCHRAMM, Inc., 640 North Garfield Ave., West Chester, Pa.

SCHRAMM
CO-ORDINATED AIR POWER

Rotadrill Rotary Drill Rigs cost less too. Air compressors are built into all models for fast, efficient chip removal . . . top drilling rates. One man can do drilling job, charge steel drive from hole to hole. Several models available: Pneumatractor-, truck-, crawler-mounted and do-it-yourself. Plus new series "H" Hi-Pressure Rotadrills, added for extremely hard-rock conditions.

Pneumatractor **Self-propelled Compressors** cost less than comparable compressors and tractors combined! PNEUMATRACTORS drive along with work. No trucks, crews tied up.

Portable Compressors save you up to 35% initial cost on 125 cfm compressors, comparable savings on every size from 20 cfm to 600. You also save 15 to 50% fuel consumption.

Enter 144 on card, page 177

State Workmen's Compensation Act. The Workmen's Compensation Board dismissed Johnson's claim for compensation on the ground that he was estopped by his agreed settlement made with his employer one year previously.

An appeal was taken, and evidence was brought out that Johnson claimed eight months after he had accepted the previous cash settlement for the release of his employer that he was injured by incurring silicosis.

In view of this evidence, the higher court held that Johnson was entitled to receive payment of compensation under the State Workmen's Compensation Act, and said:

"In the case before us, the legal right to Workmen's Compensation did not exist at the time the common law suit was filed, so the settlement cannot be considered as a bar to the subsequent claim before the board for workmen's compensation for disability."

Must Follow Law

In all legal controversies involving zoning ordinances the state statutes must be strictly followed. This means that a higher court will not render a verdict if in lower court proceedings the state statutes were violated or not complied with.

For example, in *Fleischmann* v. *Medina Supply Company*, 173 N. E. (2d) 168, the testimony showed that the Board of Zoning Appeals entered an order granting a zoning permit to the Medina Supply Company for the construction of a ready mixed concrete plant and builder's supply yard in a business and commercial (Class B) district of the township.

The owners of nearby residences filed a suit to invalidate or reverse the zoning permit. The lower court (Court of Common Pleas) refused to remand the appeal from the order of Board of Zoning Appeals granting the zoning permit, on the ground that the Board failed to file transcript of evidence offered before it, as required by a state's law. The owners of the residences then appealed to the higher court, which promptly refused to render a verdict or opinion, saying:

"The statutes here under con-

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NOW THERE ARE FOUR "HDP" PRIMERS

to help you break more rock per shift

Now you can get **all** the economy of non-cap-sensitive blasting agents.

With the introduction of the HDP-5, you now have a complete "family" of Du Pont high Detonation Pressure Primers, especially created to develop full rock-breaking power from lower-priced blasting agents such as nitro-carbo-nitrates, Du Pont "Tovex" water compatible slurry, and prill/oil mixtures.

All four "HDP" Primers contain a high-density explosive which develops a velocity of almost 5 miles/second and a temperature of about 7500°F. This combination gives the very high detonation pressure to develop full energy from non-cap-sensitive products.

There's no nitroglycerin in "HDP" Primers, so they are less sensitive to shock and friction than dynamite primers. There's no headache causing ingredient.

And assembly to "Primacord" or caps is easy to make, through holes in the primers. You can even do it with heavy work gloves on.

Your Du Pont explosives representative or distributor can arrange for you to try out new "HDP" Primers now. Call him for details. Or for a copy of our new bulletin on the subject, write Du Pont, 2446 Nemours Building, Wilmington 98, Delaware. **EXPLOSIVES**

Meet the "HDP" Primer Family

HDP-1

PROPERTIES: Weight 1 lb. • Detonation Velocity 24,000 fps • Highly resistant to water and oil • Dimensions—3" diameter cylinder 2½" long • Two axial holes—1 for "Primacord" and 1 for electric blasting caps or MS delay electric blasting caps • Packed 48 primers per case—48 lbs. net

USE: Recommended for priming all NCN products, "TOVEX" gel, and prill/oil mixtures, bulk loaded or cartridged, in holes of 4" diameter and larger.

HDP-2

PROPERTIES: Weight ½ lb. • Detonation Velocity 24,000 fps • Highly resistant to water and oil • Dimensions—3" diameter cylinder 1.4" long • Two axial holes sized for use with "Primacord" only • Packed 100 primers per case—50 lbs. net

USE: Satisfactory for priming bulk loaded NCN products and prill/oil mixtures in holes of 4" diameter and larger.

HDP-3

PROPERTIES: Weight ½ lb. • Detonation Velocity 24,000 fps • Highly resistant to water and oil • Dimensions—1¾" diameter cylinder 3½" long • Single axial hole centered in the primer sized for "Primacord", electric blasting caps and MS delay electric blasting caps • Packed 150 primers per case—50 lbs. net

USE: Recommended for priming all bulk NCN products, "TOVEX" gel, and prill/oil mixtures in holes ranging from 2" to 4" inclusive in diameter.

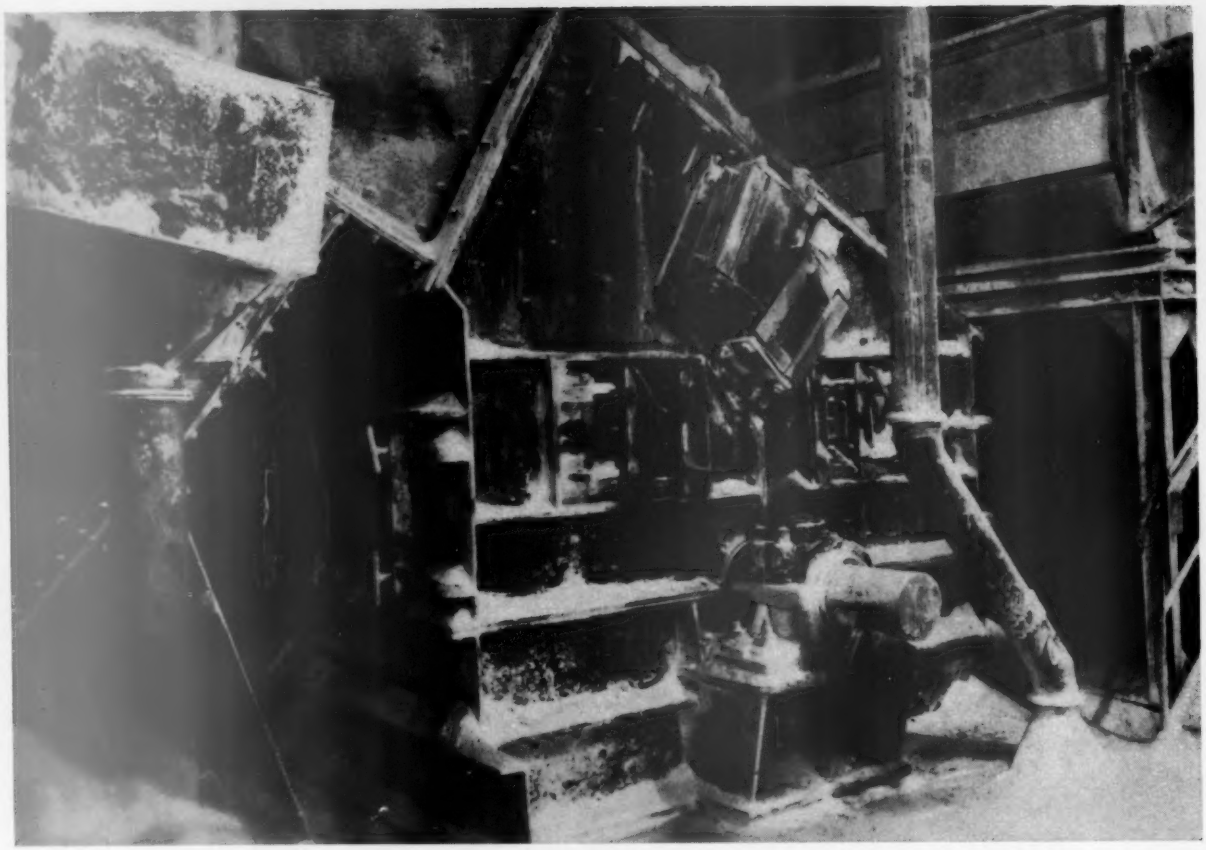
HDP-5

PROPERTIES: Weight 5 lbs. • Detonation Velocity 24,000 fps • Highly resistant to water and oil • Dimensions—5¼" diameter cylinder 4¼" long • Two axial holes sized for use with "Primacord" only • Packed 12 primers per case—60 lbs. net

USE: Recommended for priming all NCN products, "Tovex" gels and prill/oil mixtures, bulk loaded or cartridged in holes of 6" diameter and larger, under exceptionally severe conditions.

Better Things for Better Living... *through Chemistry*

DU PONT
REG. U.S. PAT. OFF.



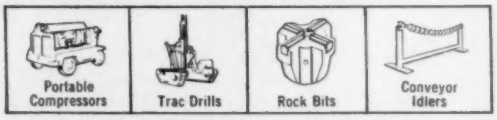
JOY-Hazemag Impact Crushers produce uniform products in limestone operation

Joy-Hazemag Impact Crushers are ideally suited for the cement industry because of the high reduction ratios and the very uniform product. Reduction ratios up to 50:1 can be achieved, and crushers with capacities up to 500 tons-per-hour are available in the Joy-Hazemag line.

In addition to the operating advantages of the Joy-Hazemag Impact Crushers there are good, sound economic reasons for their use in the cement industry. They offer very high capacity per dollar of invested capital compared with other types of crushers and pulverizers creating 10 mesh products. Large access doors give easy accessibility, maintenance is simple and wear rates are low. The large, heavy rotor of the Joy-Hazemag Crusher gives a "flywheel" effect, for smooth operation and low power consumption.

Joy-Hazemag Impact Crushers will provide a better crushed product at lower cost in any limestone crushing operation. For details on how they can save you money, consult your Joy representative or write for Bulletin 3295-26.

EQUIPMENT FOR QUARRYING . . . FOR ALL INDUSTRY



JOY

Joy Manufacturing Company
Oliver Building, Pittsburgh 22, Pa.

In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario

sideration provide for a proceeding, on appeal to the Court of Common Pleas, from final orders of an administrative agency. This court has no power under these circumstances to make orders in the case until the case had been heard on its merits in the Court of Common Pleas."

Law of Blasting

Recently an official of a quarry company asked: "Do you know of any recognized rule to determine when blasting operations are unlawful which make the company doing the blasting liable for damages to nearby dwellings and other buildings?"

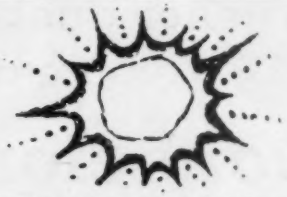
After receiving this inquiry I made an extensive review of the law, rules, and regulations on this subject. Most interesting and authentic are the explanations and rulings laid down by Dr. William Tomm Jr., who testified that he is a consulting engineer, and that he holds a Bachelor of Science degree, Master of Science degree, and a Doctor of Philosophy degree in engineering. Also, he is a licensed engineer and belongs to several national societies, namely, Sigma Xi, American Institute of Chemical Engineers, and American Chemical Society.

An important fact is that he limits his work to a study of problems relating to fires, explosions, and collisions, particularly dynamiting and the operation of quarries.

Dr. Tomm explained in detail the seismograph machine which measures movement and displacement of earth. He further explained that the accelerograph machine measures acceleration or propagation of waves. He stated there are two things of interest to a person about to begin a quarry operation—(1) the location of the blasting and (2) the proximity of buildings or anything else that might suffer from blasting.

The proper procedure is to set up a seismograph and determine just what sort of waves and transmission you are going to get, and what amount of displacement you are going to get at various distances from the blast area. No two places are alike, and there are many indeterminable variables. The only way to determine is to measure by actual measurement. (*Turn page*)

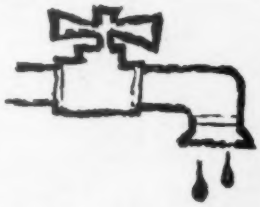
The Getman Brothers' KD-5A Scoot-Crete uses an air-cooled Deutz Diesel.



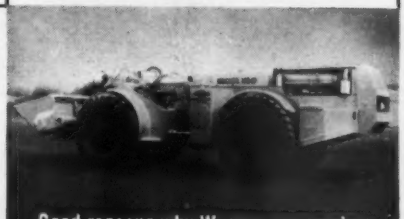
Reason: no warmup needed. Runs effectively from 40° below to 140° above (and it's approved by the Bureau of Mines.)

Fuel goes farther—every drop is burned.

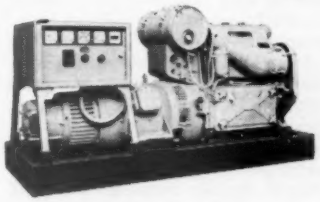
So there's less down time—no sulphurous acid condensation—hardly ever a carbon job.



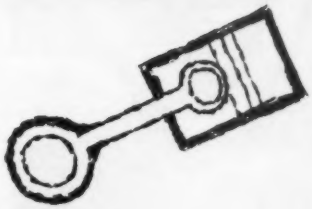
No water system; maintenance bills go down. You get full H.P. rating; no power lost for cooling.



Good reasons why Wagner ore carriers, Wagner scoopmobiles, the Jones Jackass and the Young Shuttle Buggy run on Deutz Diesels, too.



Deutz air-cooled Diesels are also used on generators, compressors, stand-by power equipment.



Complete parts and service facilities right where you need them.

PARTIAL MODEL	SPECIFICATION BHP	TABLE RPM
F1L 712	13	2300
F2L 712	26	2300
F3L 712	39	2300
F4L 712	52	2300
F6L 712	78	2300
F/A3L 514	48	1800
F/A2L 514	32	1800
A4L 514	72	2000
A6L 514	110	2000
A6L 614	110	2000
A8L 614	145	2000
A12L 614	220	2000
A6L 714	125	2000
A8L 714	168	2000
A12L 714	250	2000

Full range: 5 to 250 BHP in 1, 2, 3, 4, 6, 8, and 12 cylinders.

DEUTZ

DIESEL ENERGY CORPORATION
82 Beaver Street
New York 5, N. Y.

Please send catalogs covering the range I have checked.

☐ 10-90 HP ☐ 100-250 HP
I am a ☐ Dealer ☐ Manufacturer
☐ Operator

Dept. P&Q17

Name_____

Address_____

City_____ Zone____ State_____

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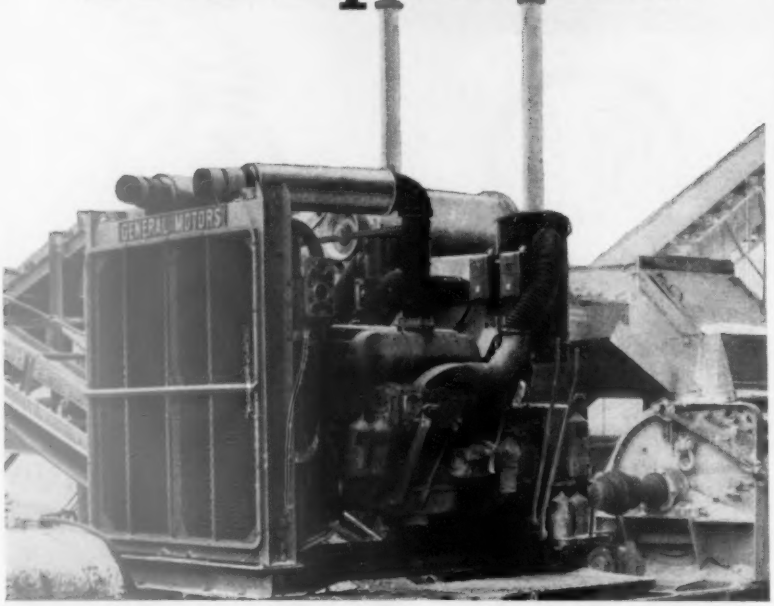
Crusher dust gets so thick
you can't breathe . . . but

Donaclones deliver 99.9% pure air!



Now factory equipment on many leading makes of engines

Dust gets so thick around this ag limestone plant, it often hides the equipment. Diesel engines on crusher and hammermill used to require frequent overhaul with expensive downtime.

After Donaclones were installed, engines were operated according to the previous overhaul schedule and then examined. *They showed practically no signs of wear.*

The Donaclone's primary centrifugal cleaner removes 98% of the dust. Only 2% remains for the Duralife paper filter giving it an extra-long service life. And it can be renewed when necessary, by dunking in water and detergent.

Add years of engine life by modernizing with Donaclones.

Write for name of dealer

Side inlet model

Center tube model

Donaclone by **Donaldson**

666 Pelham Boulevard • St. Paul 14, Minnesota

Enter 148 on card, page 177

The seismograph and accelerograph instruments are the best for this work. They are placed where you want to run the test. The variables depend on the formation of earth, rock, etc., on and below the surface.

Dr. Tomm stated that if a house is located a given distance from the blast, the most accurate way to make sure whether blast operations will or will not affect a house is to run a test in that area with the seismograph. Blasting sets up wave vibrations in the ground which represent displacement, and these waves cause damage from the blasting at various points. They travel farther in rock or hard formations than in soft ground.

For illustration, in *Cage Brothers* v. *McCormick,* 344 S.W. (2d) 203, the testimony showed these facts: The owner of an expensive dwelling sued a quarry company for damages to the building allegedly caused by blasting operations. During the trial an expert in the use of the seismograph and accelerograph machines testified that he examined the cracks in the home, and that they were caused from blasting. He declared that he knew blasting damage when he saw it, and could recognize it from its characteristics. In explaining the damage to a house, this expert said, "If the stresses and strains are strong enough, they break it."

In testifying on the effect of repeated daily blasting and its effect on a house, once it is cracked, the expert said that it is cumulative and keeps getting worse, adding that as the same force is not required to widen or make the cracks worse, they will widen.

The lawyer representing the quarry company argued that the cracks in the dwelling were caused by settling of the house. The higher court refused to agree with this argument and in holding the quarry company liable for the damages, said:

"We conclude that appellants (quarry company) in conducting the blasting operations used an excessive amount of dynamite."

Law of Written Contract

An official of a concrete block corporation asked: "What are the real and clear advantages of having

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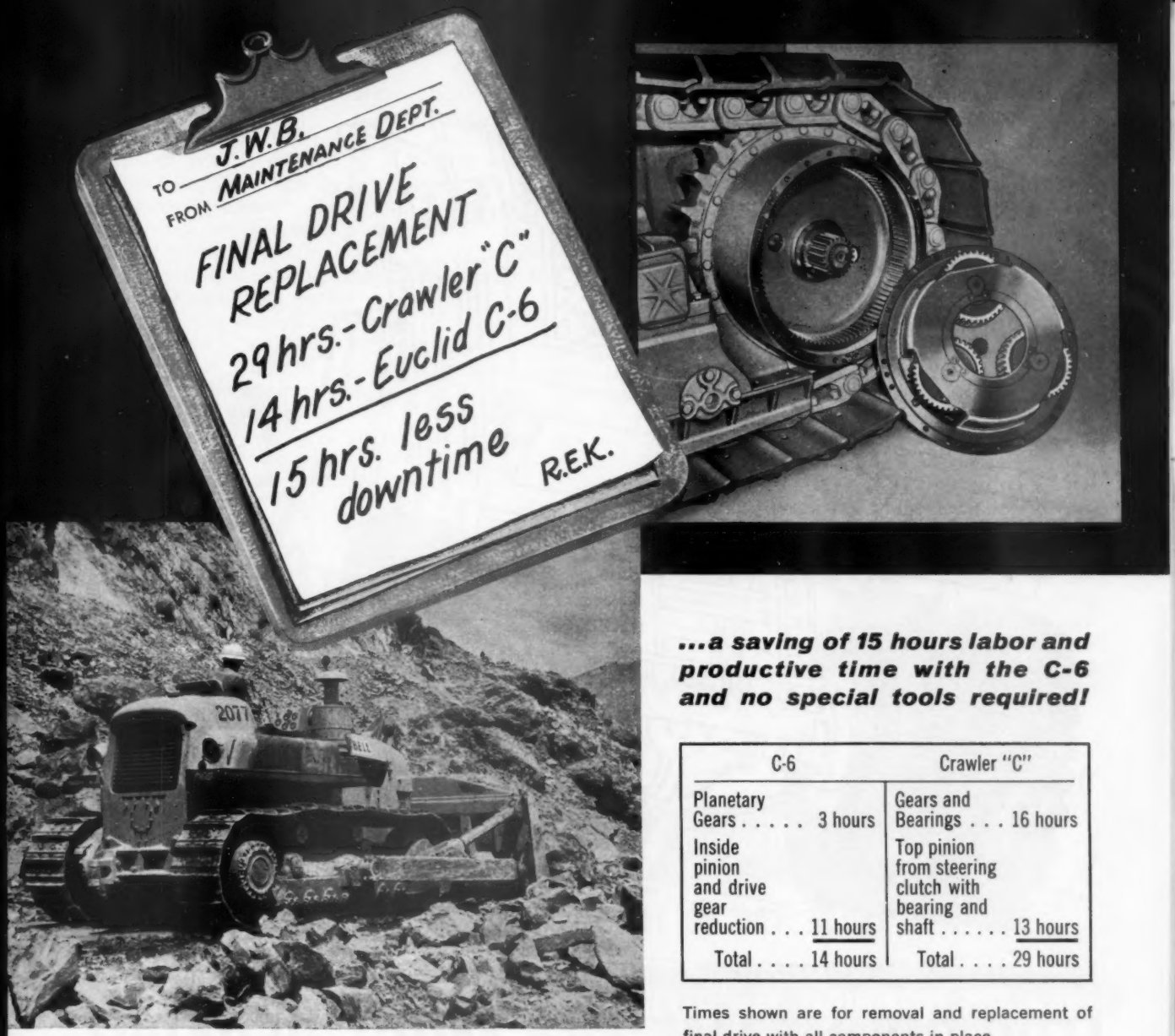

...a saving of 15 hours labor and productive time with the C-6 and no special tools required!

C-6	Crawler "C"
Planetary Gears . . . . . 3 hours	Gears and Bearings . . . 16 hours
Inside pinion and drive gear reduction . . . 11 hours	Top pinion from steering clutch with bearing and shaft . . . . . 13 hours
Total . . . . 14 hours	Total . . . . 29 hours

Times shown are for removal and replacement of final drive with all components in place.

With a 15 hour saving for final drive replacement the "Euc" C-6 gives you 15 hours more productive time on the job! Easy accessibility that's designed into the C-6 and Euclid's time-tested planetary drive save hours of repair labor . . . that means less downtime and more production. Compare these savings in terms of lower costs . . . add the extra hours available for work on the job . . . then you'll see what just this one advantage can do in cutting operating cost.

The Euclid dealer in your area would like to prove that the C-6 is the lowest cost tractor in the 200 h.p. class . . . and the most versatile by far. He's sure of it, and wants you to know the facts, too!

GM GENERAL MOTORS EUCLID

EUCLID

DIVISION OF GENERAL MOTORS, HUDSON, OHIO

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

Shock-Fortified Firestone Tires Mean

LESS DOWNTIME and MORE RECAPS!

Your quarry trucks will boost their production and beat downtime on Firestone SUPER ROCK GRIP DEEP TREAD tires. With 50% deeper treads of Firestone Rubber-X, they fight off cuts and bruises. This tough tread rubber goes all the way through to the cord, and offers a long-wearing base for extra money-saving recaps! You get more built-in impact resistance with Firestone's new Shock-Fortified cord bodies of bonus-ply nylon. Get the downtime protection that's built into Firestone quarry tires—plus fast, on-the-job service—from your nearby Firestone Dealer or Store.

Always Specify Firestone Tires When Ordering New Equipment.

Firestone

FIRST IN OFF-THE-HIGHWAY TIRE NEEDS

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written contracts instead of verbal or oral contracts?"

The general rule is that parol evidence will not be received by a court to contradict or vary the terms of a written contract. In other words, when an agreement is reduced to writing, the courts consider that it expresses the ultimate intention of the contracting parties.

Also, in the absence of fraud, parol evidence is not admissible to alter or modify the terms or legal effect of a written contract. On the other hand, if the testimony shows that the written contract contains any clause not intended to be a part of the contract, parol testimony is acceptable to prove this fact. And past custom also has a bearing upon the court's decision.

For example, in *Johns Corporation* v. *Heckart*, 277 Pac. 821, it was disclosed that a traveling salesman verbally guaranteed the quality of plaster material, although no guarantee of quality was written in the contract of sale. Printed on the order form was the following notation: "It is agreed there are no promises, agreements, or understandings not expressed on this form."

When the plaster material arrived, the purchaser refused to accept the shipment because its quality did not equal the verbal warranty made by the salesman. The seller sued the buyer, contending that the latter was bound to accept and pay for the merchandise in view of the printed notification on the contract and also because the terms of a written contract cannot ordinarily be varied by testimony relating to verbal agreements. The buyer filed a counter suit asking for $500 damages which he sustained as a result of not receiving the quality of plaster verbally warranted by the salesman.

In view of the fact that in the past the seller had customarily approved verbal or oral guarantees made by his salesman, the higher court held the seller liable to the purchaser for $500 damages, stating important law, as follows:

"To render a writing an entire contract, it must appear that it contains all of the material terms of the contract. If it does not, and a material portion of its terms have to be supplied by parol, then the entire portions of the agreement may be proved by parol . . . The provision contained in the written contract, which states, 'It is agreed there are no promises, agreements, or understandings not expressed on this form,' is not controlling, because the evidence shows that the statement was not true."

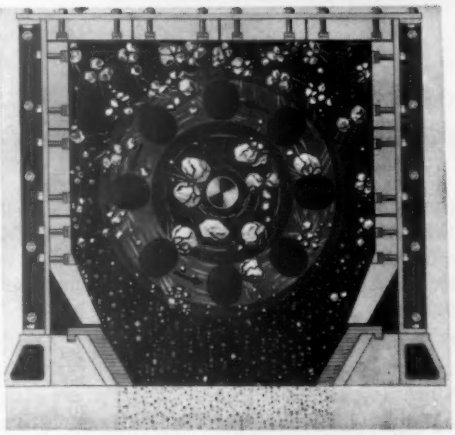
Fair Labor Standards Act

An official of a large corporation wants to know peculiar or uncommon reasons, not generally known by employers, why employees in construction work may be under the Fair Labor Standards Act.

First, it is important to know that a higher court recently held that employees engaged in the construction of a project not yet dedicated to channels of commerce or to the production of goods for interstate commerce are not within the coverage of the Fair Labor Standards Act. In other words, this higher court held that employees are not within the coverage of the Fair Labor Standards Act, although they are engaged in work on additions to plants or projects already being used to supply materials or merchandise to consumers who produce goods for sale in interstate commerce.

For example, in *Mitchell* v. *Chambers,* 214 Fed. (2d) 515, the testimony showed that a contractor entered into a contract with a city for the construction of a concrete reservoir to improve the city's water system. This contract also specified that in addition to the concrete reservoir a connecting pipeline must be installed from existing wells and reservoirs to the new reservoir. The testimony showed that the city has regularly furnished water to manufacturers engaged in the production of goods for interstate commerce. Hence, the regular waterworks employees of the city are within the scope of the Fair Labor Standards Act. (*Continued on page* 154)

SIZE AND UPGRADE YOUR
WET OR DRY AGGREGATES FOR
BOTH CONCRETE and BITUMINOUS MIX with



STEDMAN
CAGE MILL

The Stedman Single-Cage Mill reduces Gravel and Stone, either wet or dry, via the Internal-Impact Principle. See cut at left. It pulverizes unsound material to be passed off with fines—the discharged product going to wet screens, log washer, jigs, or heavy media process.

The Stedman Single-Cage Mill not only upgrades your product, but also gives the greatest percent of crushed surfaces for Black Top Mix. Example: "Crush your -2" plus ¼" including pea gravel to a product of ¾" X O, screen out minus ¼" sand and furnish a specification product for Bituminous Mix with 65 to 100% crushed particles."

Write for information on New Design Multiple Cage Mills for producing AG-LIME featuring High Capacities, Low Maintenance.

STEDMAN
FOUNDRY AND MACHINE COMPANY, INC.
Subsidiary of United Engineering and Foundry Company, Aurora, Indiana, U.S.A.

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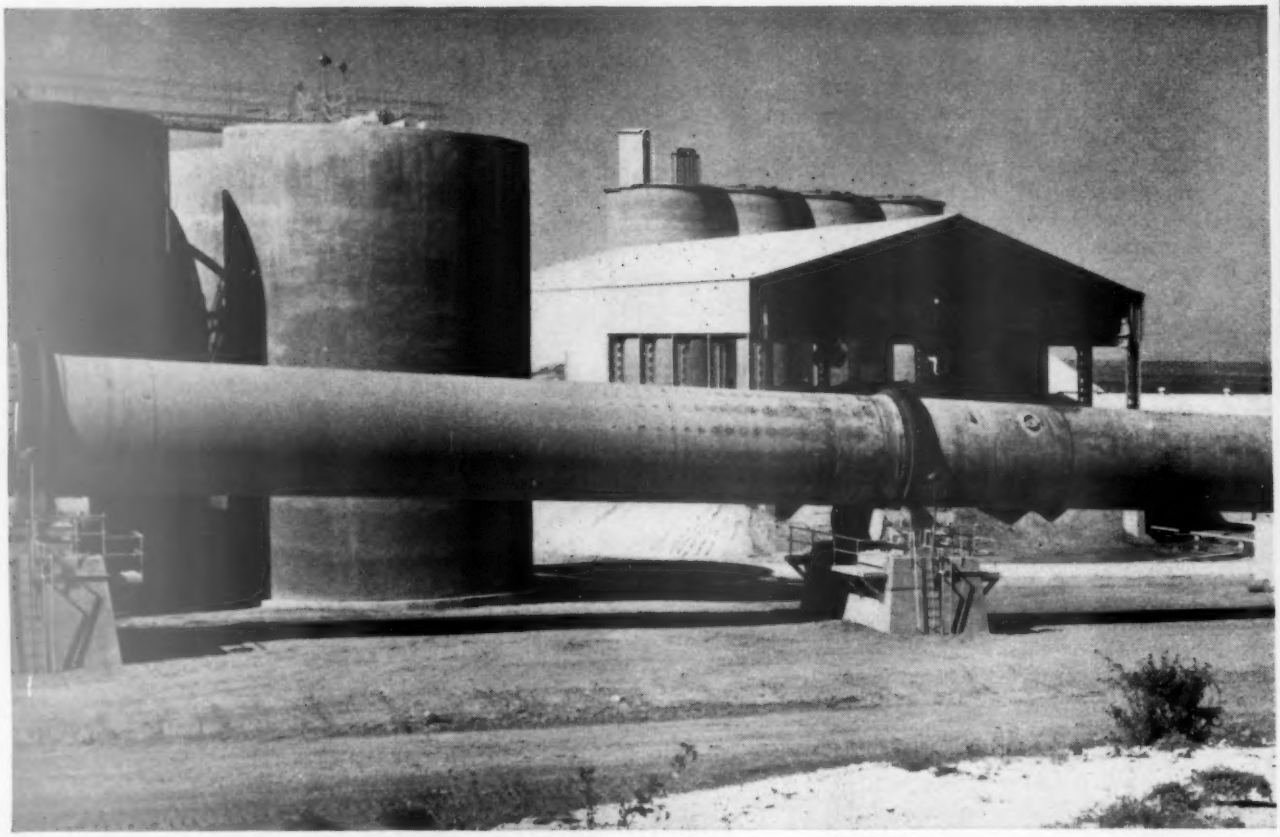
New 4,000 BBL/Day Cement Plant

Integrates Fuller Equipment



Texas Industries of Dallas Achieves Unusually Low Capital Outlay And Operations Economy By Specifying Quality Equipment

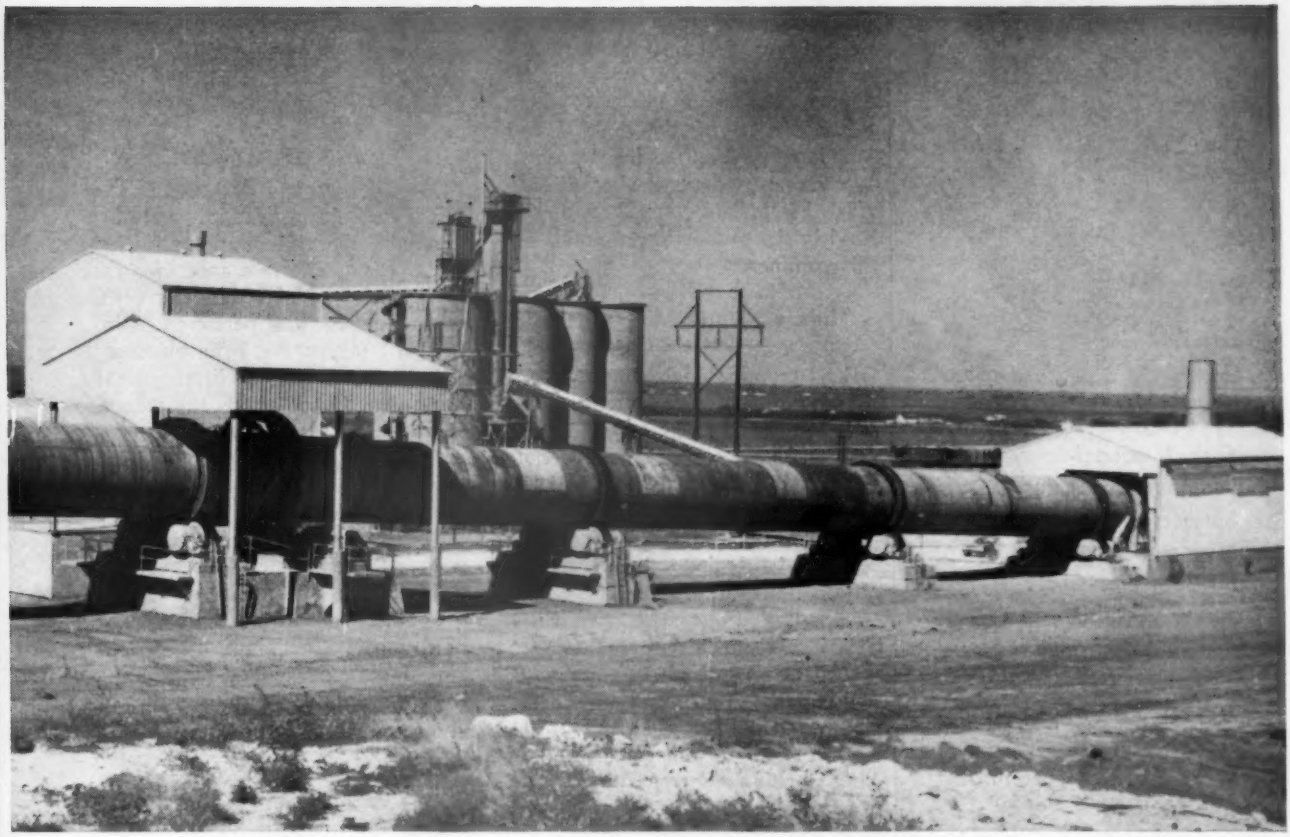
Designing on the basis that true economy in cement plant design considers operation and maintenance costs along with capital outlay, Texas Industries, Inc., with its consulting engineers, selected Fuller equipment for its new cement plant at Midlothian, Texas.

To meet specifications, the following major equipment items were integrated into this modern wet process plant: a Traylor 12 x 450 rotary kiln, a Fuller 8 x 44 horizontal grate cooler, a Traylor 1,500 HP raw mill and a 2,000 HP finish mill, in addition to Dracco multibag dust collectors, Fuller-Kinyon and Airslide fluidizing conveying systems, Fuller rotary compressors, Sutorbilt blowers, Lehigh induced draft fans, Fuller control panels, and auxiliary items.

Unified responsibility provided by Fuller helped to effect simplification of plant design and layout. The result: improved engineering liaison and procurement; significant savings in capital outlay and efficient operation.

Fuller's wide range of major cement plant components provides these advantages for leading cement producers. Behind the quality and systems compatibility of Fuller cement plant equipment is a coordinated research effort. The Fuller Research Department has made significant contributions to the industry. Investigate how Fuller unified responsibility and experience can mean substantial savings in capital costs and increased operational efficiency for you. 4184 G-249T

into Low Cost Design



FULLER EQUIPMENT AT TEXAS INDUSTRIES NEW PLANT

- Fuller-Kinyon Pneumatic Conveying Systems
- Fuller Airslide® Fluidizing Gravity Conveyors
- Fuller Control Panels
- Fuller Horizontal Cooler With Clinker Breaker
- Fuller Two-Stage Rotary Compressor
- Fuller Duplex Compressor
- Fuller Bin Signals
- Fuller Rotary Valves
- Fuller Rotary Feeders
- Fuller-Kinyon Diverting Valves
- Traylor Two-Compartment Raw Mill, 1,500 HP
- Traylor Two-Compartment Finish Mill, 2,000 HP
- Dracco Multi-Bag Dust Collectors
- Dracco Valves
- Sutorbilt Blowers
- Traylor Rotary Kiln 12 x 450
- Lehigh® Fans

Fuller

FULLER COMPANY • 101 BRIDGE ST. • CATASAUQUA, PA.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION • OFFICES IN PRINCIPAL CITIES
FULLER DIVISIONS
Dracco • Lehigh Fan & Blower • Traylor Engineering & Manufacturing • Sutorbilt Corporation

Enter 152 on card, page 177

IT'S A FACT*

Longyear offers the fastest, easiest-to-use Diamond Bit Order Service in the world. New manual with Bit "Selector-Chart" makes your bit selection and ordering instantaneous. And you are assured of a superior bit for your job on every order . . . with no complicated design or cost calculations. Contact our nearest office for your free copy of the Longyear Diamond Bits Manual.

E. J. LONGYEAR CO.
MINNEAPOLIS, MINNESOTA

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Paris, France
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Bombay, India

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Legal Decisions

(*Continued from page* 151)

The higher court held that employees of the contractor are not within the scope of the Fair Labor Standards Act, and need not be paid wages and overtime in accordance with the provisions of this law.

Therefore, the law is well settled that employees engaged in construction of a project not yet dedicated to the production of goods for interstate commerce are not within the coverage of the Fair Labor Standards Act, although the project, when completed, will be in the channels of interstate commerce, or utilized in the production of goods for this commerce.

Injured Employee Refuses Surgery

Last month a higher court established new law to the effect that under certain circumstances an injured employee may recover compensation under the State Workmen's Compensation Act, although he refuses to follow his physician's order and submit to an operation.

For illustration, in *Robertson Company* v. *Isaac,* 344 S. W. (2d) 614, it was shown that an employee named Isaac applied for compensation under the State Workmen's Compensation Act. He testified that he sustained an injury to his back while loading concrete blocks. He stated that prior to his injury he had been able to discharge the arduous duties required in this type of work, but that since he sustained the injury to his back, he has been incapacitated from performing manual labor and cannot hold a job.

The four physicians who examined him were of the opinion that his symptoms indicate he has a back strain and possibly a ruptured disc. The physicians were in agreement that only a myelogram would show with certainty whether or not he has a ruptured disc. Isaac refused to submit to a myelography, and the employer argued that for this reason Isaac should be denied compensation. It is interesting to observe that the higher court held that Isaac could receive compensation, saying:

"One of the physicians who examined appellee's (Isaac's) injury and prescribed treatment was of the opinion that, while a myelography is an effective method of diagnosis, such a test causes some pain and might involve some danger to the patient if it is not properly administered or if the injected fluid is not skillfully withdrawn from the patient's spine. From this resume of the medical testimony it is uncertain as to whether a myelography can be conducted without endangering the patient's life or his health or causing him serious discomfort."

Law of Patents

A reader wrote in part, as follows: "Can I obtain protection on my invention without filing an application for a patent? I have a good idea for an invention which I want to patent, when I get the idea perfected. Also, if I get a patent, can I prevent competitors from using my invention? If the Patent Office grants my patent, what are my rights?"

Contrary to the opinion and knowledge of a majority of persons, the United States patent laws were formulated especially for the purpose of creating interest on the part of inventors and to induce them to exert their inventive genius toward inventing new and improved things "to benefit" the general public, and not to guarantee a profit.

Also, our laws were devised for the primary purpose of inducing inventors to file in the United States Patent Office applications for patents in which details of the invention must be illustrated by drawings and clearly explained in the specifications whereby, after the expiration of a patent, any person may consult the Patent Office files and learn how to make the invention.

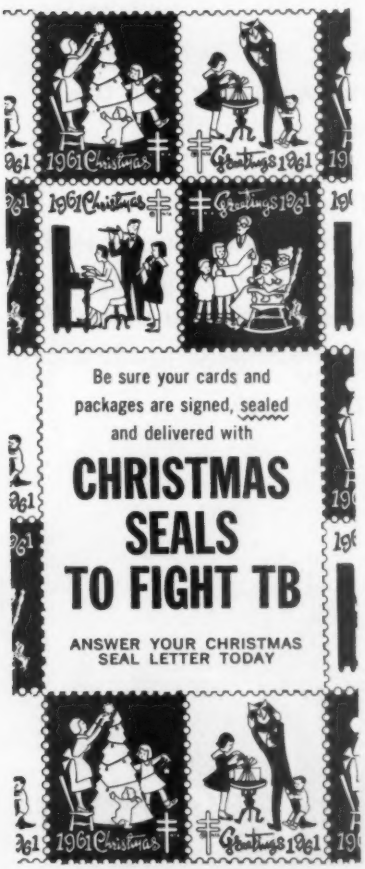
Our government offered the exclusive right to inventors to make, sell, and use their inventions for 17 years. There is no plan by which an inventor can renew or extend the life of his patent after this term.

There is no plan by which an inventor can have protection against appropriation and infringement of his invention, except to file the application in the United States Patent Office. Therefore, if an inventor has perfected his invention, the safest and best plan is file an application for a patent.

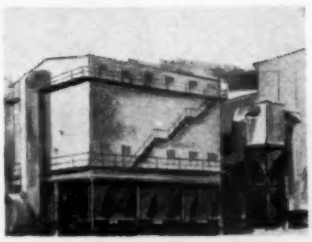
If, on the other hand, the inven-

tor has not perfected the invention, he should make written notes and explanations of every experiment, and date these various sheets. Occasionally it will be advisable to permit a dependable person to witness an experiment. In this case the observer's name and address should be recorded on the report.

When the device is perfected, the inventor may then file an application for a patent. In the United States the owner of an invention, and the one who has a legal right to the patent, is the person who was first to invent it and made the invention operate. Hence, a person may obtain a patent, but if he is not the *original* inventor, he is not the legal owner of the patent. The person who *first* invented the device may appeal to the court, which will take the patent from the one to whom it was wrongfully issued and award the patent to the original inventor if the latter did not delay too long in filing his application for a patent.


1961 Christmas
Greetings 1961
Be sure your cards and packages are signed, sealed and delivered with
CHRISTMAS SEALS TO FIGHT TB
ANSWER YOUR CHRISTMAS SEAL LETTER TODAY

Glastubes® provide a clean stack from 3 cement kilns



Wheelabrator Glastube Collectors, recently installed at three large cement plants to ventilate wet and dry process kilns, handle a combined total of more than 450,000 cfm, at temperatures up to 550° F.

A demonstration of WHEELABRATOR'S

VITAL VALUES

Three prominent U. S. cement plants, in recent months, have installed Wheelabrator control systems, utilizing glass filter tubes, to ventilate both wet and dry process kilns. Operation to date has been entirely satisfactory—the high collecting efficiencies of the glass tubes handling gases at temperatures up to 550° F. provide a *clean* stack—no visible solids in the discharged gases. Wheelabrator's unequalled experience in the use of glass filter tubes in high temperature filtration applications plus this recent success in the cement industry is proof that you can depend upon Wheelabrator for the best solution to your kiln and other high temperature problems. Write today for complete information.

VITAL VALUES FOR INDUSTRY

WHEELABRATOR
DUST AND FUME CONTROL

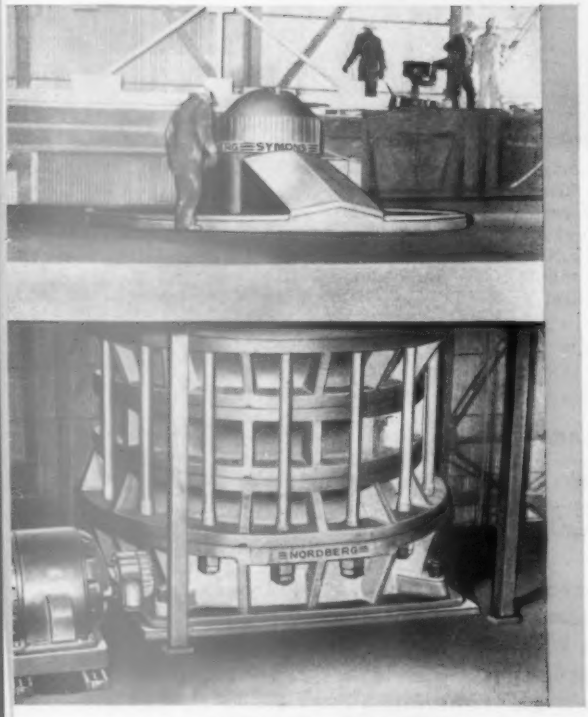
WHEELABRATOR CORPORATION, 1280 S. Byrkit St., Mishawaka, Ind.
In Canada, WHEELABRATOR CORP. of Canada, Ltd., P.O. Box 490, Scarborough, Ont.
A subsidiary of Beli Intercontinental Corp.

Enter 155 on card, page 177

Users repeatedly specify

NORDBERG MACHINERY

for reliable, low cost production of ORES and MINERALS



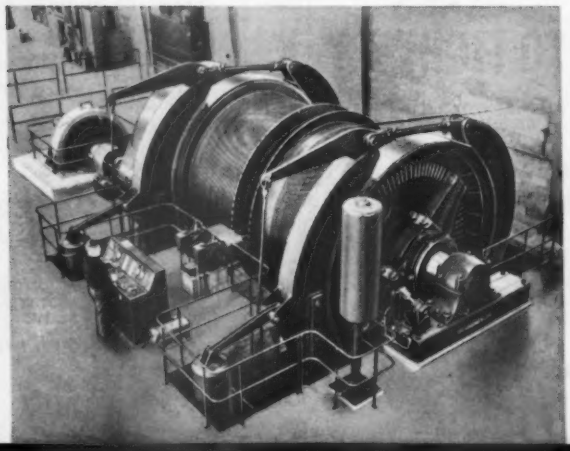
FOR PRIMARY CRUSHING OF MOLYBDENUM

This 60″ Symons Primary Gyratory Crusher has seen several years of service in the primary breaking of "moly" ores in Colorado. Other heavy duty Symons Gyratory Crushers are built with 30″, 42″, 48″, 54″ and 72″ feed opening widths and for capacities to 3500 or more tons per hour.

Your interest in lowering the cost, improving the quality, and raising the production of metallic and non-metallic ores and industrial minerals is a mutual interest which Nordberg has shared with the mining industry for 75 years.

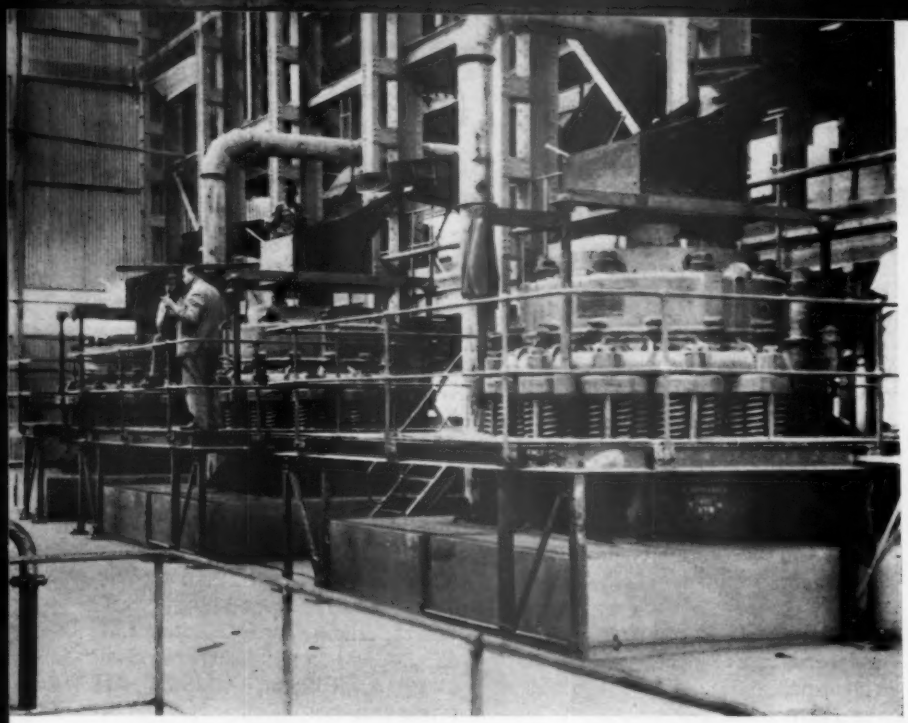
This common interest and the many years of broad, yet intimate experience with the mining fraternity is reflected in the effectiveness and quality of Nordberg mining machinery. It is because of this background that Nordberg continues to lead in the design and construction of mining machinery which is *consistently first choice of the world's leading ore and mineral producers.*

SYMONS . . . a registered Nordberg trademark known throughout the world.



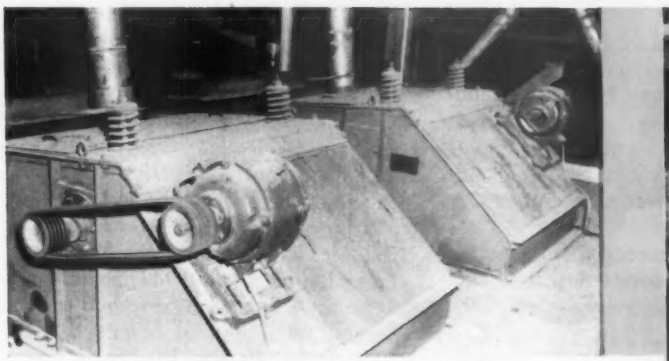
FOR HOISTING IRON ORE

Nordberg Mine Hoists for men and material are built in both conventional drum types as well as friction types . . . for push-button semi-automatic, fully automatic or manual control. Shown is a typical conventional double drum hoist.



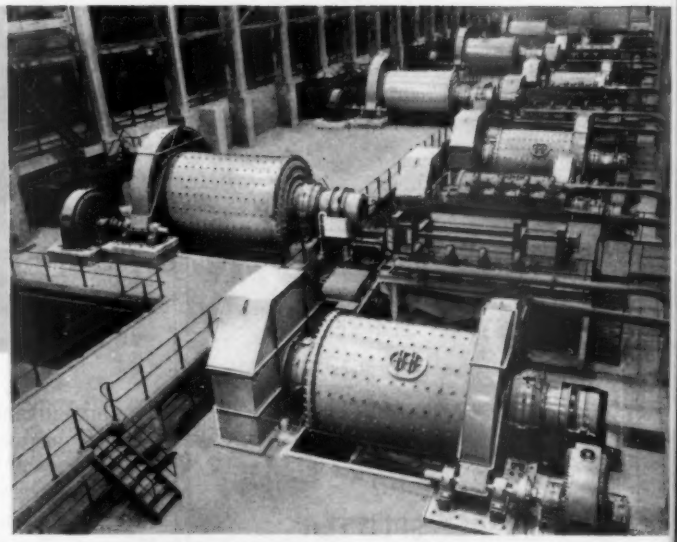
FOR FINE REDUCTION CRUSHING OF COPPER

These three Symons Cone Crushers are serving a Northern Rhodesian copper mine installation. Used for low cost, continuous production of quality products, Symons Cones are first choice of major producers the world over, in capacities to over 1500 tons per hour.



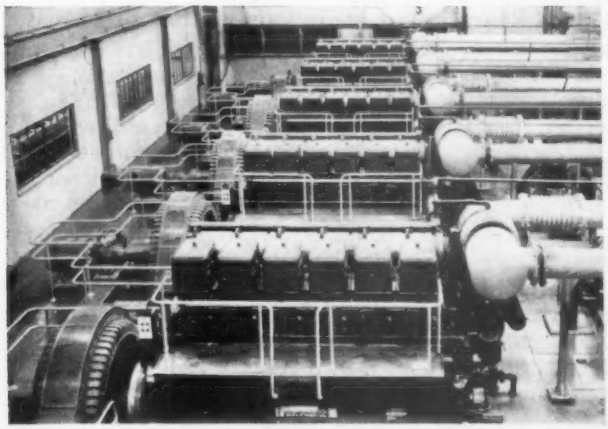
FOR SCREENING URANIUM ORE

These two 4′ x 8′ Symons Rod Deck Screens serve a large uranium processing operation in Canada. Other Symons Vibrating Screens are built in a wide range of types and sizes to handle numerous ore and mineral separation jobs from scalping to fine screening.



FOR GRINDING TACONITE

Shown are but a few of the many Nordberg Grinding Mills being used to reduce hard, abrasive taconite iron ore to the fineness of flour. Nordberg mills include Rod, Ball, Pebble, Tube and Compartment types, in sizes to 13′ in diameter and up to 50′ in length.



FOR POWER GENERATION

Nordberg 2-cycle and 4-cycle diesel, Duafuel®, and spark-ignition gas engines are reliably serving the mining industry in many parts of the world. Sizes range from 10 to over 12,000 hp in a single engine.

NORDBERG MANUFACTURING COMPANY • Milwaukee 1, Wis.

ATLANTA • CLEVELAND • DALLAS • DULUTH • HOUSTON • KANSAS CITY • MINNEAPOLIS • NEW ORLEANS • NEW YORK • PHOENIX
ST. LOUIS • SAN FRANCISCO • TAMPA • WASHINGTON • WICHITA, KANS. • TORONTO • VANCOUVER • JOHANNESBURG • LONDON • MEXICO, D. F.

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M181

Manufacturers' News

F. G. BEMIS JR., director of allied operations for the Bemis Bro. Bag Company, St. Louis, Mo., has been elected a vice-president of the company. Mr. Bemis will continue as director of allied operations, which entails responsibility for operation of the company's Visinet Mill, paper specialty and plastic packaging plants. His headquarters will remain at the Bemis general offices in Boston.

The Construction Machinery Division of Preco, Inc., Los Angeles, Calif., recently appointed BILL CHAPMAN national sales representative for Preco Back Rippers. Mr. Chapman's assignment is distributor contact and field work with earth-moving operations.

GILSON

TESTING SCREEN

Controls and guarantees your product. Fast, accurate, trouble-free test sizing of crushed stone, sand, gravel, slag, etc. Size range: 4-in. to 200-mesh.

SAMPLE SPLITTER

Reduces large samples for convenient testing. Adjusts for all materials, sand to heavy aggregate. Simple to use. Heavy welded steel construction.

Porta Screen

Portable. Motor or hand driven. Operates free-standing. Samples up to 25 lbs., 1½-in. to 200-mesh. Does not replace GILSON Testing Screen for heavy-duty test sizing.

Write for detailed literature

GILSON SCREEN CO.

MALINTA, OHIO

Enter 158 on card, page 177

WILLIAM A. ROMAIN has been elected president of Novo Industrial Corporation, parent organization of Mitchell Specialty Division, Philadelphia, Pa., and six other divisions including the Milwaukee Crane Division, Cudahy, Wis.

Mr. Romain, who joined Novo in December, 1959, as executive vice-president, was formerly president of Sherman Products, Inc., Detroit, Mich.

WALTER E. BRONSTON, whom he succeeds as president, remains board chairman and chief executive officer of Novo Industrial.

Appointment of PAUL H. MAPLE as division manager for the New Leader Division, Highway Equipment Company, Cedar Rapids, Iowa, was announced. Headquartering at 511 Adams St. in Decatur, Ga., he will cover nine southeastern states.

Before his recent appointment Mr. Maple was associated with a construction machinery distributing house.

Appointment of MORTON B. MILLENSON as manager, economic research for the Borg-Warner Corporation was recently announced. Mr. Millenson joined the staff of Borg-Warner's Roy C. Ingersoll Research Center in 1957, serving first as a scientist and later as manager of project administration. Prior to joining Borg-Warner he spent six years with American Machine and Foundry Company.

Gartner Equipment Company, Inc., 302 Sand St., Syracuse 3, N. Y., has been appointed a representative of Sutorbilt Corporation in the Syracuse area. The firm is distributor and agent for manufacturers of pumps, air compressors, fans and blowers, and spray equipment.

HOWARD GARTNER is president of the firm. EUGENE A. ALLEN is sales engineer.

RICHARD Y. MOSS, vice-president of Toledo Scale Corporation, was elected president of the Scale Manufacturers Association at its annual meeting in Cleveland in August. He succeeds C. G. GEHRINGER of The Howe Scale Company.

Other officers include KENNETH C. ALLEN, The Hobart Manufacturing Company (Dayton Scale), vice-president; and ARTHUR SANDERS, Washington, D. C. (association headquarters) was re-elected secretary.

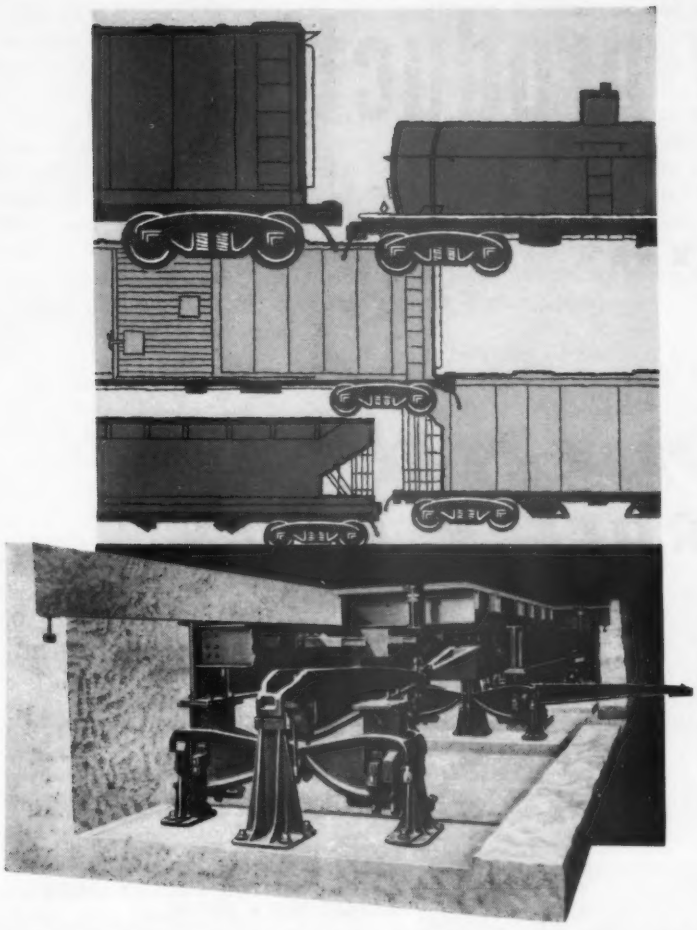
Others elected to the board of directors were: B. NEVLING CLUNE, Fairbanks, Morse & Co., Fair Lawn, N. J.; CARL E. EHRENHARDT, Winslow Government Standard Scale Works, Inc., Terre Haute, Ind.; C. G. GEHRINGER, The Howe Scale Company, Rutland, Vt.; INGRAM H. RICHARDSON, Richardson Scale Company, Clifton, N. J.; and WILLIAM A. SCHEURER, The Exact Weight Scale Company, Columbus, Ohio.

JAMES A. BALLANTYNE has been appointed controller of the Western Precipitation Division of Joy Manufacturing Company, Los Angeles, Calif. He has been with Western Precipitation since 1943, and was treasurer of the company before it became a division of Joy in 1959.

NORMAN BLOCK has been appointed director of engineering and research for Western Precipitation. Mr. Block was associated with the Foster Wheeler Corporation in New York for 13 years, where he was director of materials research, and most recently director of quality control.

RALPH J. CORDINER, chairman of the board and chief executive officer of the General Electric Company, has announced the election by the board of GERALD L. PHILLIPPE as president and of CRAMER W. LAPIERRE as executive vice-president of the Company. Both men were elected directors.

Mr. Phillippe had been comptroller and principal financial officer of the Company since 1953. Mr. LaPierre formerly was vice-president and group executive in charge of the company's electronic and flight systems group.



OUR TYPE "S" LEVER SYSTEM WEIGHS MORE R. R. CARS THAN ANY OTHER SCALE!

FAIRBANKS-MORSE RAILROAD TRACK SCALES

Obviously there's a reason more cars are weighed on Fairbanks-Morse Track Scales. The reason is that these precision scales are more accurate—and remain so for longer periods of time.

Behind this accuracy is Fairbanks-Morse's exclusive Type "S" Lever System with Double Parallel Link Suspension. This is the only system which swings parallel to the direction of traffic . . . and thus provides the finest protection for the scientifically ground and machined pivots and bearing . . . thus, the greater accuracy.

This accuracy . . . and the dependability of these scales—backed up by 131 years of precision craftsmanship—explains why increasing numbers of shippers, manufacturers, miners and processors are insisting on Fairbanks-Morse for the day-in, day-out rapid weighing of full-capacity railroad cars.

Because these scales are so conservatively rated, consistent use at their maximum capacity cannot affect their accuracy and long life. Models are available in any length or capacity to meet modern shipping requirements. Use of a Type-Registering Weighing Beam or an automatic "Floaxial Dial" with Printer" assures clear, accurate printed records of each weighing . . . eliminates mental calculations and provides error-free reading or transposing of figures.

For further information write: **Dept. S-1; Scale Division; Fairbanks, Morse & Co.; 100 Electra Lane, East Station; Yonkers, New York.**

FAIRBANKS MORSE

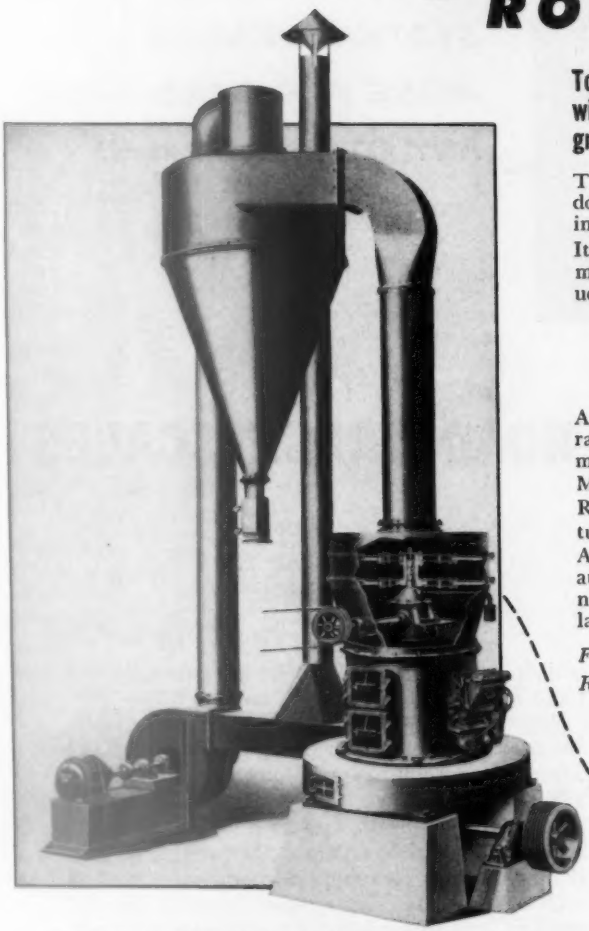
A MAJOR INDUSTRIAL COMPONENT OF

FAIRBANKS WHITNEY

roll up new production... and profit...records

with

Raymond ROLLER MILLS



RAYMOND MULTI-PURPOSE ROLLER MILL WITH DOUBLE WHIZZER AIR SEPARATOR

Top performing RAYMOND Multi-Purpose ROLLER MILLS with WHIZZER AIR SEPARATION lead the field in fine grinding in the CHEMICAL and PROCESS INDUSTRIES.

This Mill combines the Raymond High Side Roller Mill and the double Whizzer Separator to afford great versatility and economy in the handling of many fine grinding problems.

Its wide scope of application covers the preparation of powdered materials . . . from simple fillers to fancy chemicals. Typical products pulverized include . . .

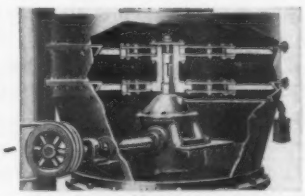
PIGMENTS • FULLERS EARTH • INSECTICIDES • IRON OXIDES • TALC • BARYTES • KAOLIN AND CLAYS • SULPHUR • CARBON MIXTURES • STARCH • LIMESTONE • BAUXITE • CALCIUM SILICATE • MINERAL FILLERS • PHOSPHATE ROCK • GYPSUM.

A single, easy adjustment of the Whizzer controls the fineness range from 20-mesh grades to products essentially all minus 325-mesh.

Mill capacities reach 40 tons per hour and more with a Super Roller Mill. Flash Drying Accessories may be installed when moisture removal is required.

All aspects of Fine Grinding are combined in a clean, dust-free, automatic system that is economical in operation and maintenance. Installations are flexible and readily adaptable to any plant layout.

For detailed information send for the Raymond Roller Mill Catalog Number 79 Q



Mills are available with Single or Double Whizzer Separators. Whizzers have set of radial blades attached to a disk that revolves on a vertical shaft in separating chamber. Variable speed drive insures finger-tip control of fineness.

COMBUSTION ENGINEERING, INC.

Raymond Division

Combustion Engineering-Superheater Ltd.
Montreal, Quebec, Canada

427 WEST RANDOLPH STREET • CHICAGO 6, ILLINOIS

Sales Offices in all Principal Cities

The Yale & Towne Manufacturing Company has appointed three new distributors for its Trojan tractor shovel line.

Western Road Machinery Company, with main facility at 2300 S. Main St., Salt Lake City, Utah, and branches at 3320 Western Ave., Boise, and 590 W. 19th St., Idaho Falls, is the new Trojan distributor for Utah; Idaho south of Idaho County; and for Lincoln, Sublette, Sweetwater and Uinta counties in Wyoming.

Bardale Equipment Company, 2646 Creve Coeur Drive, St. Louis, Mo., is the new Trojan distributor for Madison, St. Clair, Monroe, and Randolph counties in Illinois, and for all counties in Missouri east of and including Scotland, Knox, Shelby, Monroe, Audrain, Callaway, Osage, Maries, Phelps, Dent, Shannon, Carter, and Ripley.

Mingolla Machinery Company, Concord Industrial Park, Concord, N. H., is the new Trojan distributor for the State of New Hampshire.

HENRY M. SHIELDS will become special consultant for Fuel Engineering Company, New York, N. Y. Formerly vice-president and laboratory director of Bull & Roberts, Inc., he recently retired and established himself as an independent consultant. Under this new arrangement with Fuel Engineering Company of New York, Mr. Shields will make his headquarters in the company's New York offices.

Coronado Engineering Company, 800 Welch Rd., Palo Alto, has been appointed the California distributor for the McLanahan Corporation. Coronado will sell and service McLanahan sand and gravel washing equipment, crushers, feeders, and other machinery.

WILLIAM F. LANGE has been named chief engineer of the Products Division of Todd Shipyards Corporation, New York City. A member of the A.S.M.E., Mr. Lange was previously employed as electrical representative of Gibbs & Cox, marine architects. Prior to that, he was manager of engineering for the Peabody Engineering Corporation, New York, N. Y.

WILLIAM M. SALMON, Chippewa Falls, Wis., general service manager of Bark River Culvert & Equipment Company, Eau Claire, Wis., has been awarded the Master Technician certificate of Melrose Technical Institute, service training center of International Harvester Company's Construction Equipment Division, located at Melrose Park, Ill., a suburb of Chicago.

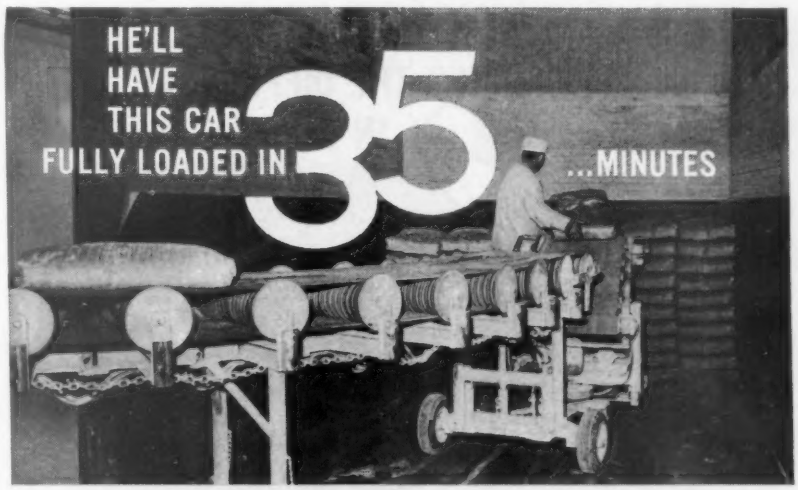
To qualify as a master technician, Mr. Salmon was required to have eight years continuous experience on International construction equipment (including three years field experience), responsibility for shop administration for at least two years, completion of a minimum of 50 courses at Melrose Tech and the presentation of at least 25 courses.

The appointment of JOHN W. WEST, formerly assistant sales manager, to the position of general sales manager of the Crosby-Laughlin Division of American Hoist, Fort Wayne, Ind., has been announced.

Mr. West replaces PERCY GOUGH, who recently was promoted to director of marketing for American Hoist, its divisions and subsidiaries.

FRANK C. LEGERE has been promoted to regional sales manager in the state of New York for Motorola Communications and Electronics, Inc., Chicago, Ill. In this position, he supervises the sale of 2-way radio systems and associated communications equipment to industrial concerns, business and agricultural organizations, and municipal and public safety agencies.

Mr. LeGere, who joined Motorola in 1955, had been sales manager in the Boston, Mass., area. His new territory, with headquarters in Buffalo includes all counties in New York except nine in the New York City area. Mr. LeGere succeeds JOHN FUSSELL, who has been appointed government account specialist for Motorola in southeastern United States.



...without help, using a
POWER-CURVE Loader

Bag loading costs of eight cents a ton are not uncommon in plants using Power-Curve equipment. One man loads and stacks direct from the packer with no need to lift a single bag. Loads can be palletized or stacked in any pattern, also put into warehouse storage.

There are Power-Curve installations near you. Let us show you how your plant can benefit from a custom engineered Power-Curve loading operation.

Literature and engineering details sent on request.

POWER-CURVE
CONVEYOR COMPANY
2185 SOUTH JASON ST., DENVER 23, COLORADO

Enter 161 on card, page 177

ELMER KRASKE recently became the representative of the Cleveland Worm & Gear and Farval Divisions of Eaton Manufacturing Company in their Omaha, Nebr., sales district. The Omaha territory includes portions of Iowa and Nebraska.

Mr. Kraske's other accounts include integral horsepower motors, and hydraulic and electrical controls.

HAROLD E. COFFMAN has been named sales promotion manager of Oliver Corporation. Mr. Coffman will handle Oliver dealer and distributor promotional programs and will be responsible to ROBERT L. DINNSEN, director of advertising and sales promotion.

Mr. Coffman has been with Oliver since 1955 as assistant director of manufacturing budgets, territory manager, and sales and market analyst.

Acquisition of TransWeigh Company, King of Prussia, Pa., and Automatic Measurement Corporation, Phoenixville, Pa., has been announced by CompuDyne Corporation, Hatboro, Pa.

The new acquisitions, both in the field of electronic automated weighing, represent approximately one million dollars in sales per year in electronic automation equipment for industry. The acquisitions were made on an exchange-of-stock basis, the purchase price being over a half-million dollars.

Both companies will function in conjunction with Weighing and Controls, Inc., a CompuDyne subsidiary. The direction and coordination of the combined operation will be the responsibility of J. C. WILLIAMS JR., vice-president and general manager of Weighing and Controls.

THOMAS L. MELL, founder of Automatic Measurement, will join Weighing and Controls in a staff capacity, involved in sales and engineering. STANLEY D. HARTSHORN, founder of Transweigh, will continue to direct that operation. No changes in management, personnel, or plant site are contemplated.

FRANK A. SEETON has been appointed manager of the Metallurgical Operations Division, Denver Equipment Co., Denver, Colo. Mr. Seeton, formerly Field Engineer, and Assistant Director of the Denver Ore Testing Division from 1947 to 1956, and more recently Manager of Mining and Milling Operations for Colorado Oil & Gas Corporation, is an internationally known metallurgist, author and consultant on mineral processing.

L. T. GREINER, Pacific zone manager of B. F. Goodrich Tire Company, Akron, Ohio, has been appointed assistant to the president of the B. F. Goodrich Company in charge of customer relations. He will make his headquarters in Akron. Mr. Greiner joined the company 32 years ago as a member of the advertising department.

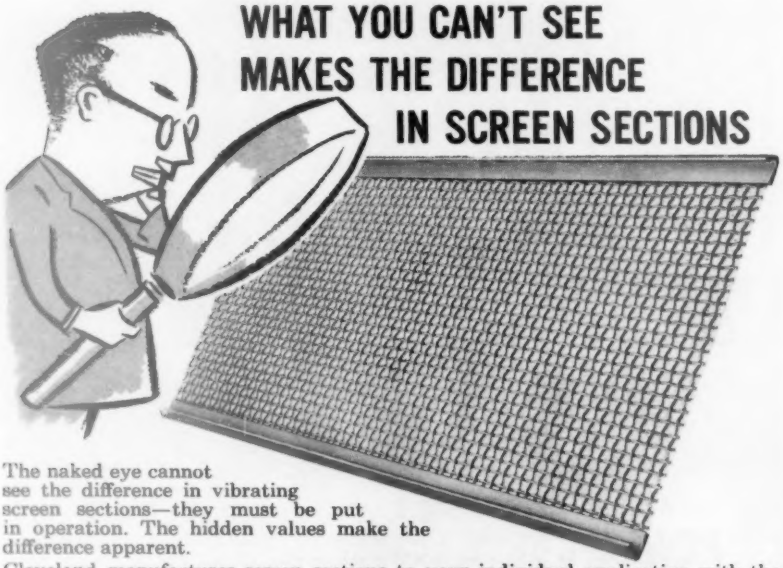
VERNON E. PRAY has been appointed domestic sales manager for the Schield Bantam Company, Waverly, Iowa, manufacturers of power cranes and excavators.

Mr. Pray came to Schield Bantam late in 1949, from Peoria, Ill., where he headed the sales promotion department for R. G. LeTourneau, Inc.

KENNETH E. QUICK has been appointed sales representative for The Day Sales Company, Minneapolis, Minn. He will represent The Day Sales Company in metropolitan San Francisco and the northern California area.

Dorr-Oliver Incorporated, Stamford, Conn., has recently acquired the business and assets of Titlestad Corporation, New York, N. Y.

GEORGE B. KNECHT, president of the Titlestad Corp., will continue as manager of Dorr-Oliver's new Titlestad division.



WHAT YOU CAN'T SEE MAKES THE DIFFERENCE IN SCREEN SECTIONS

The naked eye cannot see the difference in vibrating screen sections—they must be put in operation. The hidden values make the difference apparent.

Cleveland manufactures screen sections to your individual application with the emphasis on hidden values. Minimum wear, maximum strength, the desired ductility are a few of the extras you can't see but that are built into Cleveland screen sections. These, coupled with measured accuracy and continual high tonage, provide a practical screen for a profitable operation.

Write for Bulletin 160 containing complete specifications on space cloth and a how to order section on vibrating screens.

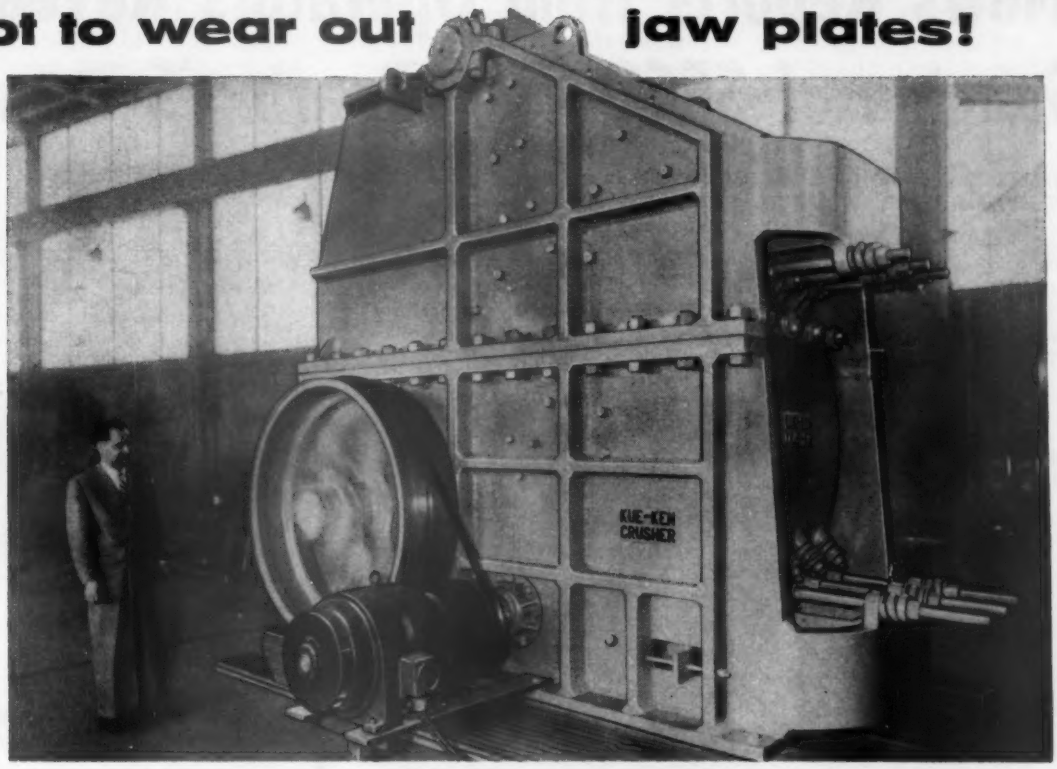
THE CLEVELAND WIRE CLOTH AND MANUFACTURING COMPANY

3574 East 78th Street • Cleveland 5, Ohio • Phone DI 1-1832

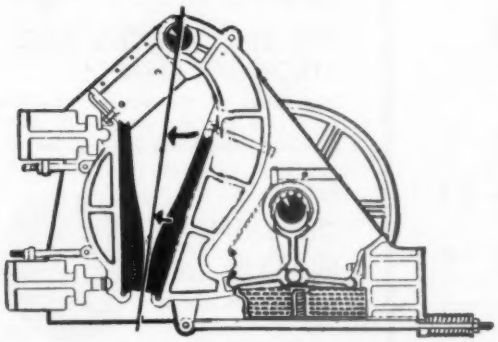
CLEVELAND WIRE CLOTH

Enter 162 on card, page 177

KUE-KEN® uses power to crush rock... not to wear out jaw plates!



Kue-Ken "crushing without rubbing" eliminates the major cause of power loss in conventional crushers. Kue-Ken produces greater output of crushed rock for power consumed than any other crusher. The Kue-Ken pendulum type swing jaw crushes rock squarely without the usual upward-downward rubbing action that wastes power and wears out jaw plates. It also eliminates power loss inevitable with crushers that must lift heavy, unbalanced jaws. Kue-Ken swing jaw, driven by toggles that multiply leverage 3 to 1, has maximum leverage at top where large rocks are crushed with less power. In shop test, the 48″ x 42″ Kue-Ken, above, is started by a 30 hp motor with a single vee belt and runs mounted on skids not fastened to the floor at the operating speed of 275 rpm on only 17 hp!



Kue-Ken "crushing without rubbing" saves power and lengthens jaw plate life at least 5 times! The pendulum type jaw supported on a stationary hinge pin in center line of the crushing zone swings in an almost straight line to crush rocks squarely without rubbing.

Additional power savings are engineered into every section of the Kue-Ken design. A precision machined toggle mechanism operates in a sealed, filtered oil bath to reduce wear and friction to the absolute minimum. Power that is wasted in non-sealed, dirt-catching mechanism is fully utilized by Kue-Ken in crushing rock.

Kue-Ken operates with a single lightweight flywheel that is easily started with a normal duty squirrel cage motor. An automatic, adjustable safety release integral with the flywheel ends shearing or breaking parts caused by tramp iron. In 33 sizes from 12″ x 7″ to 48″ x 48″, Kue-Ken Crusher crushes more rock with less power for lowest cost-per-ton crushing.

KUE-KEN® CRUSHERS

"CRUSHING without Rubbing"

STRAUB MFG. CO., INC. 8381 Baldwin St., Oakland 21, Calif.

Jaw Crushers Gyratory Crushers Overhead Eccentric Crushers Revolving Screens Classifiers Feeders Rib Cone Ball Mills Concentrating Tables Vibrating Screens

Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.
Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

DEALERS:
SEATTLE, WASH., Washington Machinery Co. • VANCOUVER, B. C., Universal Equipment Co. • SALT LAKE CITY, UTAH, Lund Machinery Co. • SAN ANTONIO, TEX., Closner Equipment Co. • LOS ANGELES, CALIF., Garlinghouse, Froman Co. • SAN FRANCISCO, CALIF., Aggregate Engineers, Inc. • PORTLAND, OREGON, Air-Mac, Inc., of Oregon • BISMARCK, NORTH DAKOTA, Midwest Equipment Co.

News Reports from Operators Reveal Stamina of SECO Twin Bearing Screens

Now, you can expect and get a new kind of stout-hearted performance from 2-bearing screens.

That is, if they are SECO TWIN BEARING screens. Yes, actual results, reported to us by producers themselves, give strong proof that SECO design and engineering superiority really pay off . . . day after day, year after year where it counts . . . on the job. Today, with your own profits so dependent on operational efficiency, we believe it will pay you to get the full information about SECO TWIN BEARING screens.

"Over 1,000,000 tons without a whimper from our SECO TWIN BEARING screens" reports Jules Koczat of Buffalo Crushed Stone Corporation. "We've screened eight sizes of aggregate for 1½ years without a minute of downtime. We are so pleased we now have seven SECO TWIN BEARING screens on the job."

"We like the action and performance of this screen." Joe Schwendt, Sup't., Amico Sand & Gravel Co., Riverside, N. Y.

"This screen is a real screener. Elmer is very happy with it, and says they will be ordering more of them in a month or so." R. P. Fulton, Southern Machinery & Supply Co., Roanoke, Va.

"This sieve analysis is a real endorsement for SECO TWIN BEARING screens." K. K. Kagarise, General Sup't., The Standard Slag Co., Youngstown, Ohio.

"Our SECO TWIN BEARING screens are doing a real good job of screening. Our only replacement has been screen cloth." Paul Padgett, Purchasing Agent, Thompson, Weinman & Company, Sylacauga, Alabama.

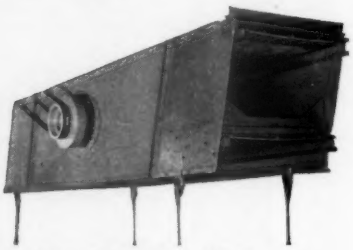
"I never believed a 2-bearing screen could perform like this." We're averaging 120 TPH in three sizes of gravel plus concrete sand . . . with no trouble at all on our 3 x 10 Triple Deck model." Eric A. Krehbiel, President, Clarence Sand and Gravel Corp., Clarence, New York.

SEND FOR BULLETIN TB-21

Designed for Volume Low Cost Screening

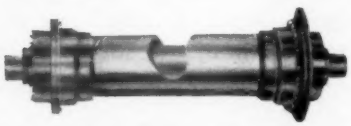
SAND · GRAVEL · CRUSHED STONE · CINDERS · SLAG and AG-LIME

Single, double, triple and half deck variations. May be suspension or base mounted.



RIGID BOX FRAME CONSTRUCTION

Eliminates body distortion thus preventing undue stress on shaft assembly.



20%-30% HEAVIER AND STRONGER SHAFT

The heart of the screen, precision built with an extra margin of safety and with extra heavy bearing, too!

OIL BATH BEARING LUBRICATION

Provides more thorough lubrication for longer bearing life. Special flinger type seals prevent oil entering the tube assembly.

SECO
PRODUCER PROVEN
VIBRATING SCREENS

SCREEN EQUIPMENT CO., INC., BUFFALO 25, N. Y.

The board of directors of Esco Corporation, Portland, Ore., has announced the election of J. J. DAVIS to the presidency of the firm. NEWMAN WARD, former president, becomes chairman of the board. C. F. SWIGERT JR. becomes honorary board chairman.

Mr. Davis joined Esco's Seattle sales district in 1936 as office manager. In 1959, he was elected to the position of executive vice-president.

Mr. Ward who started in Esco's pattern storage department in 1916 became president in 1952. Mr. Swigert Jr., son of Esco's founder, started with the company in 1914. He was president of Esco from 1935 to 1952.

HENRY T. SWIGERT has been appointed vice-president, finance. He joined the firm in 1955.

Harbison-Walker Refractories Company has established a new district sales office in Charlotte, N. C.

LEWIS M. ALLEN has been named district sales manager of the new sales district which includes all of North and South Carolina and certain counties in Georgia, Tennessee, and Virginia.

Mr. Allen joined the Harbison-Walker organization in 1952 and has been attached to the Birmingham district office since 1953.

The appointment of JOSEPH W. GRAF as domestic sales manager has been announced by Athey Products Corporation, Chicago, Ill., designers and manufacturers of heavy-duty loading and hauling equipment.

Mr. Graf has been with Athey for eight years, serving the firm as sales manager of the export division prior to his new appointment. He previously served in the export department of the Trackson Company, Milwaukee, Wis.

A former geophysicist, WILLIAM L. JOHNSON JR., has been appointed representative in the north central area for the Hammerdril, bottom hole pneumatic impact drilling tool, by Mission Manufacturing Company, Houston, Texas. Mr. Johnson will work out of Duluth, Minn.

The J. I. Case Company has announced plans to deactivate its Rock Island, Ill., tractor assembly plant. It is reported that when the move is completed this fall, Case will manufacture its entire line of agricultural wheel tractors at its Clausen Works in Racine, Wis. Previously, Case has built three of the six models of tractors in the agricultural line at Racine, and three smaller models at Rock Island.

Engines for the three smaller tractors will continue to be built at Rock Island in a self-contained manufacturing facility of the plant there. In addition to being used in the agricultural tractors, these engines are also used in Case industrial and utility tractors manufactured at Burlington, Iowa.

FRANK T. DAINESE has been elected vice-president of Independent Explosive Company, Cleveland, Ohio, specialists in commercial high explosives for use in quarries, mines, and construction work.

His experience includes work as a research specialist on explosives at the testing laboratory of the U. S. Bureau of Mines near Pittsburgh.

Mr. Dainese joined the Charleston, W. Va., office of the Independent Explosive Company 15 years ago as a one-man operation. Under his leadership, the territory of this office now covers all of West Virginia and parts of six adjoining states, with an organization of salesmen, magazine keepers, and truckers.

The election of HAROLD NUTT as chairman and chief executive officer of the Borg & Beck Division of Borg-Warner Corporation was recently announced.

Mr. Nutt, a veteran automotive executive and president and general manager of Borg & Beck since 1955, will be succeeded in that position by James F. Beré. Both appointments became effective September 1.

Mr. Nutt joined Borg & Beck in 1930 as director of engineering. Mr. Beré comes to Borg-Warner from the Axelson Manufacturing Company, Los Angeles, a division of U. S. Industries, Inc., where he was president and general manager for the past five years.

no more downtime to replace connectors...

HANCO FLUX POWER SCREEN HEATERS

transmit power through the air!

With the all new Flux Power by Hanco all mechanical connections between transformer and screen are eliminated. The 0 to 4000 ampere current is transmitted through the air by inserting a conductor through the eye of the transformer. This permits unrestricted vibration, maximum power transmission and true screen balance.

5 YEAR GUARANTEE

★ Dust-tight, waterproof construction
★ Dual voltage, 220/440 volt
★ Use either plain or stainless cloth
★ Anti-magnetic steel side rails

write today for full details:

HANCO INTERNATIONAL

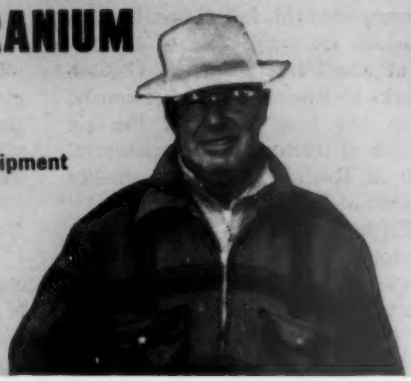
CANTON 7, OHIO, U. S. A. — CABLE HANCO

EUROPEAN SALES AND MFG.
HANCO INTERNATIONAL
6 WIBAUTSTRAAT • AMSTERDAM, HOLLAND

Enter 165 on card, page 177

FROM CONSTRUCTION WORK TO URANIUM MINING

"Bonded Buy used Cat equipment has always given me first-rate service," says GARN MOODY



Garn Moody has capitalized on his working knowledge of heavy equipment to branch out into a number of successful business operations. From his initial start in contracting, he has put his reliable spread of used Cat-built equipment to work in the non-allied fields of farming and, since late 1958, a thriving strip-mining operation in the rugged country near Delta, Utah.

"When you're moving into an unfamiliar new field, you've got to have smart crews and dependable equipment," says Garn Moody. "My used Cat-built rigs have always given me good steady production. We've worked our two D8s and two DW20s 8 to 10 hours a day since we bought them two years ago. The work is rough, but down time has been light."

Garn has purchased all three types of used equipment his Caterpillar Dealer offers: Bonded Buy, Certified Buy and Buy and Try. "In each case," he says, "the deal worked out fine for me. I'll buy under the same contracts any time. Dependability from Bonded Buy machines is like buying a new machine."

Success is never a sure thing, but if you're expanding your operations and trying to keep your equipment outlay on a budget basis—without sacrificing reliability—check your Caterpillar Dealer's protected purchase plans.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BEST BUYS IN NEW AND USED EQUIPMENT

Enter 166 on card, page 177

Clupak, Inc., reports the latest Clupak extensible unit to go on line was installed on the No. 1 kraft paper machine at Hudson Pulp & Paper Corp.'s mill at Palatka, Fla. The machine has a wire width of 236 in.

HERBERT J. HENDERSON has been appointed central region manager for TRW Computers Company, a division of Thompson Ramo Wooldridge, Inc., Canoga Park, Calif. He will be headquartered in Chicago, and will be responsible for all TRW computer sales activities in 13 central states and three provinces of Canada.

Mr. Henderson replaces RAY J. STANISH, who has been promoted to general sales manager for TRW Computers. Formerly district sales manager in the company's New York office, Mr. Henderson joined TRW in March 1960. Previously he had been district sales manager for the semiconductor products department of General Electric Company.

Two distributors have recently been appointed for the Michigan line of construction and heavy bulk materials handling machinery of the Construction Machinery Division, Clark Equipment Company.

Western States Machinery Company, 2400 W. 7th Ave., Denver, Colo., will cover the state of Colorado. LEIGH M. JONES is president.

Rowand Machinery Company, N. 808 Division St., Spokane, Wash., has been appointed distributor in 10 counties in Idaho and in four counties in Washington.
EDD

The Chavigny Company, 2200 Welch St., Houston 19, Texas, has been appointed sales representative for the Pennsylvania Crusher Division of Bath Iron Works Corporation, West Chester, Pa.

The Chavigny Company will represent Pennsylvania Crusher in Texas with the exception of a few counties in the southwest portion of the state. Established in 1947 and specializing in process equipment, the principals are NEIL L. CHAVIGNY and A. D. SCOTTY JR.

Enter 167 on card, page 177 →

2200 HOURS OF WORK— NOT ONE MINUTE OF DOWN TIME

2200 hours of trouble-free service. That's the record established by this D7D Tractor since its delivery last May to the Calera Quarry in Birmingham, Alabama, a division of the Vulcan Materials Co. The machine handles stockpiles, working two eight-hour shifts, five days a week.

There are several reasons behind this dependable service. Consider, for example, the tractor's Caterpillar lifetime lubricated track rollers. Bigger and stronger than former D7 rollers, they *never* need attention until rebuild time—*and rebuild time is a long time coming.*

The tough undercarriage is only one important feature of the new D7 . . . there's a 140 HP CAT TURBOCHARGED ENGINE that pushes blades full of rock with only ounces of fuel . . . there's an exclusive CAT OIL CLUTCH that will outlast any dry-type clutch . . . there's a PRESSURE-LUBRICATED POWER TRAIN that ignores shocks and heavy loads, keeps the tractor producing season after season . . . and there are other features like the new DRY-TYPE AIR CLEANER that takes out *at least* 99.8% of all dirt even under the worst conditions, and takes only about five minutes to service.

A new D7 could be the tractor you need in your operations . . . talk it over with your Caterpillar Dealer . . . there's no better place to invest equipment dollars.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

DEPENDABLE PRODUCTION WITH A NEW D7D

MARTIN C. DWYER has been appointed manager of the Construction Equipment Exposition and Road Show. The exposition, said to be the largest indoor industrial exhibit in the world, is scheduled to open February 23, 1963, at the International Amphitheatre, Chicago. The exposition is produced and managed by the Construction Industry Manufacturers Association and will, for the first time, bring together as co-sponsors of the exposition the American Road Builders' Association, The Associated Equipment Distributors, and the International Road Federation.

CHARLES E. PETOT has been appointed a district representative by Koehring Division of Koehring Company, Milwaukee, Wis. He will cover Kentucky, Ohio, Indiana, and Michigan, and will work out of Cleveland, Ohio.

Mr. Petot was a salesman with Equipment & Supplies, Inc., Pittsburgh, Pa., for over eight years before joining Koehring.

HARLEY BROTZMAN has been appointed sales engineer in the compressor division for Fuller Company, Catasauqua, Pa. He will be primarily concerned with the sales and service of Fuller's line of rotary compressors.

Prior to joining Fuller, Mr. Brotzman was assistant sales manager for the Pennsylvania Pump and Compressor Company, Easton, Pa. He was also with Bethlehem Steel Company, Bethlehem, Pa., from 1940 to 1946.

RICHARD V. SCOTT, vice-president and assistant director of sales of the Bemis Bro. Bag Company, St. Louis, Mo., has been named director of sales for the company. Mr. Scott has been with Bemis since 1931, when he joined the company as a bookkeeper in the accounting department in Kansas City.

He succeeds H. V. HOWES, who retired May 31, after 40 years with Bemis. Mr. Howes had been director of sales since 1942, and a Bemis vice-president since 1946.

EARL J. CUTLER, who joined Oliver Corporation, Chicago, Ill., in 1951, has been named territory manager in Louisiana, working out of the Memphis (Tenn.) branch. Mr. Cutler will work with Oliver farm and construction equipment dealers in Louisiana.

He previously was a territory manager out of Oliver's Harrisburg (Pa.) branch.

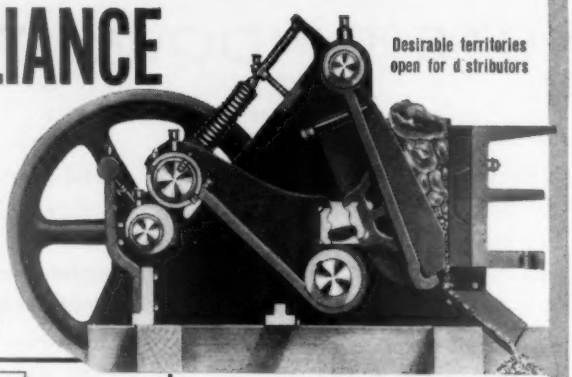
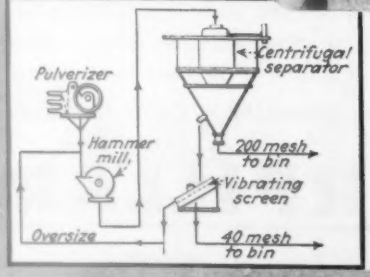
GEORGE J. PEER has been named general sales manager for Basic Incorporated, Cleveland, Ohio. Mr. Peer was formerly sales manager for the company's furnace products division. He will now be responsible, in addition, for the company's chemical, agricultural, and commercial stone sales.

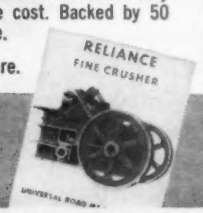
Lister-Blackstone, Inc., Long Island City, New York, manufacturers of diesel engines, have announced the following appointments of distributors: Acme Power Supply Co., Inc., Kansas City, Kans., covering eastern Missouri; Brinker Supply Co., Pittsburgh, Pa., covering southwestern Pennsylvania; Engine Power Specialists, Phoenix, Ariz., covering central and northern Arizona.

PERCY S. GOUGH has been appointed to the newly created position of director of marketing for American Hoist & Derrick Company, St. Paul, Minn. Mr. Gough joined American Hoist in 1937, and most recently was general sales manager of the Crosby-Laughlin Division at Fort Wayne, Ind.

The appointment of RICHARD G. BUCHIGNANI as southern regional representative for Hyster Company's Industrial Truck Division, Portland, Oregon, was recently announced. He will assist and counsel industrial truck dealers in marketing activities throughout an 11 state area.

Mr. Buchignani will continue to reside in Memphis, Tenn., where he has been active in the material handling business for the past 18 years as vice-president and part owner of a material handling equipment dealership.

LEVER-TYPE PULVERIZER
by RELIANCE
Desirable territories open for d stributors
CRUSHES HARDEST MATERIALS
¼" to dust in one operation



Successfully reduces limestone, emery rock, sand stone, granite, shale, iron ore, many others. No pre-breaking needed.
Ideal for first-stage preparation of material to be passed to a grinding mill and separator . . . see drawing.
Heavy-duty all-steel construction. Very low maintenance cost. Backed by 50 years experience.
Send for literature.


UNIVERSAL ROAD MACHINERY CO.
Main office and factory: Kingston, N. Y.
New York City office: 117 Liberty St.
Enter 168 on card, page 177

Shipper/Marblehead Lime Co.; Carrier/Garden City Trucking Company; Receiver/United States Steel Corporation.

7/8" PEBBLED LIME... DELIVERED ON TIME...

Fast, low-cost bulk trailer delivery is helping many producers of mineral and other rock products develop new, profitable business opportunities in the chemical, steel and construction industries. And Butler pneumatic delivery trailers are successfully delivering products ranging from the finest talc-like pulverants to coarse granulars.

For full details contact your carrier. Or write for free brochure, "A New and Better Way to Move Dry Flowables."

BUTLER

BUTLER MANUFACTURING COMPANY

7561 East 13th Street, Kansas City 26, Mo. • 1061 Sixth Avenue, S.E., Minneapolis 14, Minnesota

Manufacturers of Equipment for Transportation, Bulk Storage, Farming, Outdoor Advertising • Metal Buildings • Plastic Panels • Contract Manufacturing
Factories at Kansas City, Mo. • Minneapolis, Minn. • Galesburg, Ill. • Richmond, Calif. • Birmingham, Ala. • Houston, Tex. • Burlington, Ontario, Canada

ALUMINUM DUMP BODIES WEIGH 50% LESS...

Haul Up to 3,500 Lb of Extra Payload for Added Profit

Durable Alcoa Alloys Defy Denting to Save Maintenance Dollars

Dent Resistant

Modern Alcoa Aluminum alloys, advanced design and new fabricating techniques combine to give today's aluminum dump bodies far greater dent and impact resistance than standard steel construction. They withstand years of hard knocks and grueling service. Service records prove aluminum assures longer unit life with less maintenance.

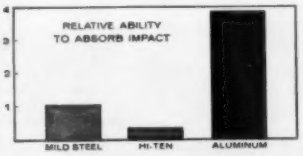
Light Weight

When you trim a pound of dead weight from a rig, you take on an extra pound of payload worth a dollar per year in extra revenue. Producing earnings as much as 16 per cent above average, lightweight dump bodies of Alcoa® Aluminum can pay for themselves in less than a year of operation. From then on, it's *all extra profit* for the operator.

Corrosion Resistant

Aluminum's corrosion resistance helps hold down repair costs to boost earnings even further. Needing no protective coating of paint, aluminum alloys stand up under the corrosive and abrasive attack of many commonly hauled bulk materials. Chemicals, salt, high-sulfur coal, fertilizers, lime and sand can't inflict damage, so aluminum dump bodies stay new-looking far longer than steel, wash clean in half the time—and dump clean every time.

A dump body folder, which tells how many operators have increased profits by switching to aluminum, is yours for the asking. Write to Aluminum Company of America, 1792-K Alcoa Bldg., Pittsburgh 19, Pa.



PROOF: Aluminum Is Tougher Tougher than steel! Dump bodies built of Alcoa Aluminum alloy can take *three* times as much impact as steel, at *half* the weight.

Member ATA FOUNDATION INC American Trucking Industry

ALCOA ALUMINUM

ALUMINUM COMPANY OF AMERICA

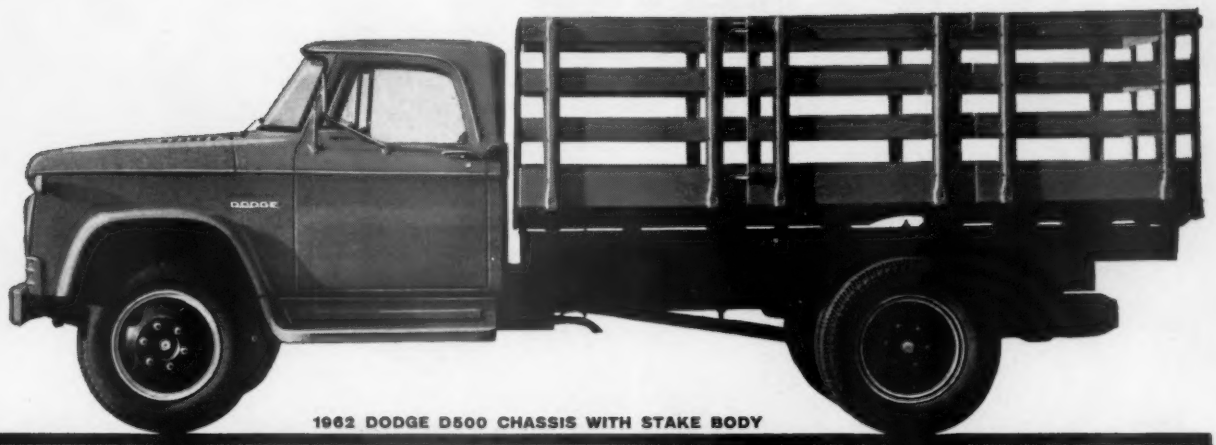
Entertainment at Its Best . . . **ALCOA PREMIERE** with Fred Astaire as Host . . . Tuesday Evenings, **ABC-TV**

1962 DODGE HALF-TON PICKUP

ANNOUNCING THE

FROM 1/2-TON PICKUP TO DIESEL POWER, Dodge trucks for 1962 feature more than 50 engineering advances to make them tougher, more tight-fisted. ■ And they're on display right now at your Dodge dealer's, priced to compete with every full-size truck rolling the road. ■ Whatever your trucking job, there's a tough Dodge to do the job better, faster, more economically.

1962 DODGE W200 4-WHEEL-DRIVE SWEPTLINE PICKUP



1962 DODGE D500 CHASSIS WITH STAKE BODY

'62 DODGE TRUCKS

Advancements include new axles, transmissions, steering gears, diesel engines, and electrical components. ■ Every gasoline-powered model has a 35-amp alternator as standard equipment for faster, surer starts in all weather. ■ See and drive the 1962 Dodge trucks at your dependable Dodge dealer's.

DODGE BUILDS TOUGH TRUCKS

1962 DODGE CT800 GASOLINE-POWERED TANDEM DUMP

Enter 172 on card, page 177

B.F.GOODRICH TIRES MOVE ROCK FILL FOR COUGAR DAM.
Finished dam will tower 485 feet, stretch 1,600 feet, and slope from a base width of 1,500 feet to a crest width of 40 feet.
Six-mile reservoir will provide water resources for flood control, power production and public recreation. $50-million project is scheduled to take four years.

30 TONS OF ROCK CRASH onto B.F.Goodrich Rock Service tires. Tires work two shifts a day on scrapers, bottom dumps, rear dumps, water wagons, graders, rollers and mobile cranes. Yet it's not unusual for tires to be retreaded twice.

CONTINUOUS TIRE INSPECTIONS play a key role in keeping M-C&S' equipment on the go. The B.F.Goodrich Unified Contractors Program helps contractors save on all their rubber products—and protective clothing—requirements. Ask your BFG dealer to show you how this new program can help *you*.

B.F.Goodrich helps move a mountain to build a dam

B.F.GOODRICH ON-THE-SPOT SERVICE helps M-C&S get the most out of equipment. Tire changes seldom take longer than 15 minutes. BFG Servicemobiles carry all the latest power tools, are manned by tire experts.

12-MILLION CUBIC YARDS OF ROCK AND EARTH FILL RIDE TO $50-MILLION COUGAR DAM PROJECT ON B.F.GOODRICH TIRES

They're changing the topography of Oregon's Willamette Valley. Rock quarried from a knob high above the South Fork McKenzie River is taxied down a tortuous road by a fleet of giant earth movers. It will become part of the fill for Cougar Dam, a Corps of Engineers flood control project that will be the largest structure of its type in the Northwest.

Altogether, general contractor Merritt-Chapman & Scott Corp. will move 12-million cubic yards—every one on B.F.Goodrich tires. You'll find B.F.Goodrich Rock Service tires with Cut Protected compound hard at work here. BFG developed this compound for jobs like Cougar Dam, where upwards of 30-ton loads must be carried over hard, rock-surfaced roads. It takes a mighty big boulder to gash this compound, and if it should, there's BFG Flex-Rite Nylon cord construction to withstand the impact (and resist heat blowouts and flex breaks too). No wonder many Rock Service tires at Cougar Dam can be retreaded twice.

B.F.Goodrich on-the-job service plays a key role in keeping M-C&S equipment on the go. All 600 BFG tires are inspected regularly. Tire changes seldom take longer than 15 minutes. There is a BFG tire warehouse and shop less than a mile from the project. A BFG tire record system keeps the contractor informed of costs and helps control inventory.

Supplying contractors with longer-wearing tires and dollar-saving service is an everyday job for B.F.Goodrich. On many projects B.F.Goodrich supplies everything from tires to boots to belts through its new Unified Contractors Program. Whatever *your* need, it will pay you to talk to your B.F.Goodrich dealer. His know-how can make a big difference in your profit picture. Look him up under Tires in the Yellow Pages. *The B.F.Goodrich Company, Akron 18, Ohio.*

Specify **B.F.Goodrich Tubeless or tube-type tires when ordering new equipment**

B.F.Goodrich

Enter 174 on card, page 177

ML-309 Moto-Loader makes the dirt fly

Digs and loads up to 300 yards of sand an hour directly from bank to trucks.

Fiorito Brothers, Seattle, Washington, needed 300,000 yards of sand in a hurry for a road job. So they turned to their ML-309 Moto-Loader, with an operating capacity of 9,000 lbs, to do the job. It dug and loaded out trucks at an average of 250 yards an hour—frequently hit as high as 300 yards an hour.

How can a loader of this size turn out production figures like this? Easy, if it is designed and built like an ML-309. Of course, no other loader is, because the "309" has exclusive features that provide performance that sets it apart from other loaders of comparable size.

A demonstration will convince you of how much more a "309" can do: how its job-tested features can put more profit in your pocket with its power, stamina, balance and fast, easy control. Planetary wheel drive keeps torque near the ground where it belongs. Low center of gravity and proper weight distribution eliminate bounce, teeter or wobble. Four-speed, full-power shift, Moto-Matic transmission, plus one-foot control of forward and reverse and acceleration, give cycle times that up production.

Want to know more? Ask your nearby Moto-Loader distributor. He has all the answers. You'll like them.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

more information, please

Use postcard to receive literature or details on new equipment and products reported in this issue.

A PROFIT CHART that in effect is a slide rule is available from *Precision Equipment Company.* The device, simple in operation, gives selling price in terms of percentage or profit on the basis of cost. Instructions for use are included with each chart. The chart is free upon request, on business letterhead. (301)

ROOF VENTILATOR MODEL CRD (direct drive centrifugal) is described in a bulletin issued by American-Standard Industrial Division of *American Radiator & Standard Sanitary Corporation.* Specifications and capacities for different static pressure conditions to guide engineers, architects, and purchasing agents are provided. (302)

BULLETIN FL-661, a new brochure issued by *Webster Manufacturing, Inc.,* describes systems for unloading, feeding operations, conveying and elevating, parts and package handling, processing and special conveying for handling bulk materials such as cement, sand, gravel, etc. The brochure also includes Webster's services for engineering, design, and on-site erection of complete installations. (303)

"CLOSED CIRCUIT TV—NEW EYES FOR SCIENCE AND INDUSTRY," a brochure put out by *Fairbanks, Morse & Co.,* Electronics Division, describes how closed-circuit TV can be used for surveillance, transportation and dispatching, cost reduction, and quality control, security observation of hazardous locations, etc. Also described is the "Mini-Camera," for observing the interior of a 3-in. pipe. (304)

A NEW BULLETIN, 606CV, issued by *The Clarkson Company* describes controlled flow of abrasive slurries and corrosive pulps through

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CHICAGO, ILL.

BUSINESS REPLY CARD
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—POSTAGE WILL BE PAID BY—

Pit and Quarry Publications
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CHICAGO 5, ILL., U. S. A.

OCTOBER ***PIT AND QUARRY*** **1961**

Insert key numbers found below items on advertising, literature, and new equipment pages. Print company name if not keyed.

Void after 60 days.

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Name _____ Title _____

Company _____

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City _____ Zone _____ State _____

We produce _____

OCTOBER ***PIT AND QUARRY*** **1961**

Insert key numbers found below items on advertising, literature, and new equipment pages. Print company name if not keyed.

Void after 60 days.

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_____ _____ _____ _____ _____ _____

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

We produce _____

more information, please

Use postcard to receive literature or details on new equipment and products reported in this issue.

NEW SUBSCRIPTION ORDER FORM

Send PIT AND QUARRY to me for

____One Year $3* ____Two Years $5 ____Three Years $6

____Payment enclosed ____Bill me ____Bill company

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

Type of business and products _____

*U. S., U. S. Possessions, and Canada only.

Pan American countries, $10 a year; elsewhere, $15 a year.

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215 Wayne Street
ST. JOSEPH, MICHIGAN

the use of the "Series C" Clarkson Valve. The major features of the Series C are its iris-like closure of replaceable rubber inner liner by air or hydraulic pressure, its venturi configuration, and its adaptibility to automated control. **(305)**

CATALOG NO. 42C on Right-angle spiral bevel gear speed reducers—single reduction—is offered by *D. O. James Gear Manufacturing Co.* This 24-page catalog contains construction specification, explanation of rating tables, selection data, horsepower ratings, dimensions and weights. **(306)**

SPECIALIZED GEOLOGICAL SERVICES are described in a brochure issued recently by *Doeringsfeld, Amuedo and Ivey.* The report describes their personnel—consulting geologists—and their "most vital" tool, photogeology. D.A.I. offers information on quarrying and mining, techniques and ideas for preliminary geologic background and detailed geology. **(307)**

"METALLIZED CARBON GRAPHITE PRODUCTS," a booklet issued by *Metallized Carbon Co., Inc.,* provides technical information and engineering data on metallized carbon materials. The latter are characterized by their ability to run completely without lubrication at temperatures up to 1,000 deg. F. under heavy loading with minimum wear to bearing or shaft. **(308)**

INDUSTRIAL DUST AND FUME CONTROL is described in Bulletin No. 922-A issued by *Pangborn Corporation.* One type of air pollution control method mentioned is the "CB" centrifugal dust collector for handling coarse dusts and materials. Another is the "CV" Ventrijet wet collector for dusts of average fineness. **(309)**

Du Pont reports on

a new type of conveyor belt carcass

that sets new standards of performance

Made with load-bearing components of DACRON® fiber, it resists deterioration better, carries more, cuts handling costs

Today, a new type of conveyor belting offers you cost-saving performance on the toughest jobs in industry. The reason is a fabric carcass made with strong reinforcements of "Dacron"* polyester fiber running the length of the belt.

Superior resistance to deterioration—"Dacron" is not affected by rot and mildew, so these belts do not have problems with moisture in cover cuts, or when fabric is exposed in the splice area. "Dacron" also withstands belt-fastener rust and most chemicals to assure long service under tough, wet or dry operating conditions.

Improved durability—Impact resistance is excellent. The high strength of "Dacron" teams up with the strength and elasticity of nylon, the cross fiber, to sustain shock loads. "Dacron" resists stretch. This means lower growth of the belt in service—fewer take-ups.

Better flexing and troughing—Because of this high-strength carcass made with "Dacron", these belts can be thinner, permitting the use of smaller-diameter pulleys. They are more flexible, train better on idler rolls—resulting in less belt wander and edge wear. These belts have a better resistance to flex failure—an important long-life feature.

Troughing up to 45° is possible, compared to the usual 20°. This means belts can be narrower and lighter—and still carry larger loads. The result is reduced handling costs right down the line!

More for your belt dollar—It all adds up to superior performance and the economy of long service with fewer belt replacements, less down-time, lower maintenance costs. Make sure you ask about conveyor belts made with "Dacron" polyester fiber next time you order—get the most for your belt dollar!

E. I. du Pont de Nemours & Co. (Inc.), Textile Fibers Dept., 191 South Main St., Akron 8, Ohio.

*Du Pont's registered trademark for its polyester fiber.

DU PONT
REG. U.S. PAT. OFF.
Better Things for Better Living
. . . *through Chemistry*

DACRON® *polyester*
the conveyor belt fiber

Enjoy the "Du Pont Show of the Week"—Sunday Nights, NBC-TV

SAVE SPACE, SAVE WEIGHT, SAVE MONEY!

Dyna V

There's a *difference*, as you can see! The 10-groove D-section sheave in the foreground is replaced with the narrow 8-groove 5-V Dyna-V sheave on the line shaft. *Same power*, in a far more compact installation, with a $477 difference in price. And big future savings in belt replacement costs!

Everyone is going Dyna-V! Thousands of installations reveal that Dyna-V performance is *even better* than promised when we first introduced this new compact drive. In medium and high horsepower ranges, savings go as high as 30%!

Dyna-V can handle 3 times as much power in the same space. Dyna-V Sheaves decrease shaft overhang, increase bearing life. And Dyna-V Belts possess *all* premium qualities. Conditions requiring static conductivity or resistance to oil, moisture and heat are met by Dyna-V's one grade—the finest. Ask your Dodge Distributor, or write us for complete drive bulletin. Dyna-V Drives are available for capacities from 1 to 1500 hp.

Dodge Manufacturing Corporation, 4000 Union St., Mishawaka, Ind.

The Products with the Pluses...

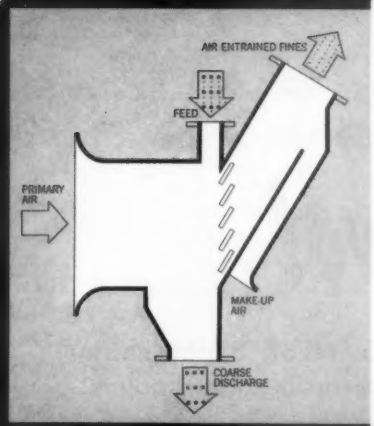
DODGE

of Mishawaka, Ind.

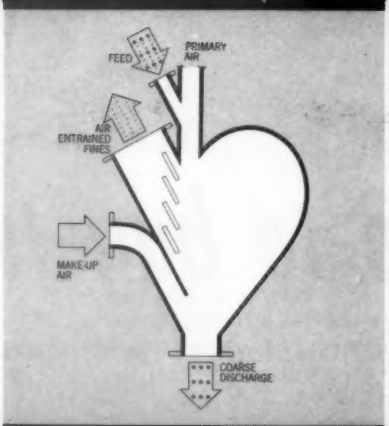
CALL THE TRANSMISSIONEER, your local Dodge Distributor. Look under "Dodge Transmissioneer" in the *white* pages of your phone book. Factory trained by Dodge, he can give you valuable assistance.

PVC alumina caustic soda sugar salt lime silicon carbide phosphate rock coal powders sodium hydrosulphite DDT sodium phosphate alumina soap particles coal metal ores aluminum oxide slag cement raw mix metal ores metal powders cosmetics limestone sodium nitrate sugar sodium phosphate DDT silicon carbide cocoa powder soda ash sodium hydrosulphite soap particles glass beads cement raw mix glass beads soda ash slag lime aluminum oxide caustic soda cocoa powder coal PVC phosphate rock salt limestone cosmetics sodium nitrate

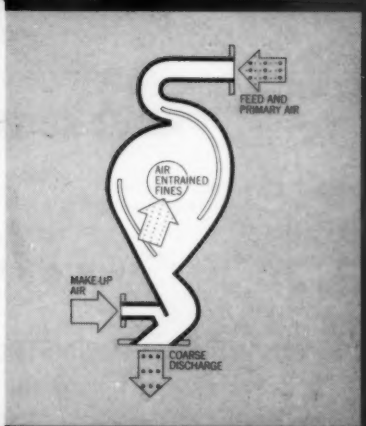
these products —and more— now handled by BUELL CLASSIFIERS



Gravitational Classifier — Replaces screens and sieves in the 20 to 65 mesh range with comparable or better efficiency. Low maintenance, instant control of cut point and limited space requirements.



Gravitational-Inertial Classifier — Extremely high efficiencies for separation in 65-200 mesh range. Pneumatic conveying and elevating of feed and fines, no moving parts, single damper to control cut points.



Centrifugal Classifier — Unmatched performance in the 200 mesh to 20 microns size range. No moving parts, easy adjustment of cut points, and pneumatic conveying and elevating of feed and fines.

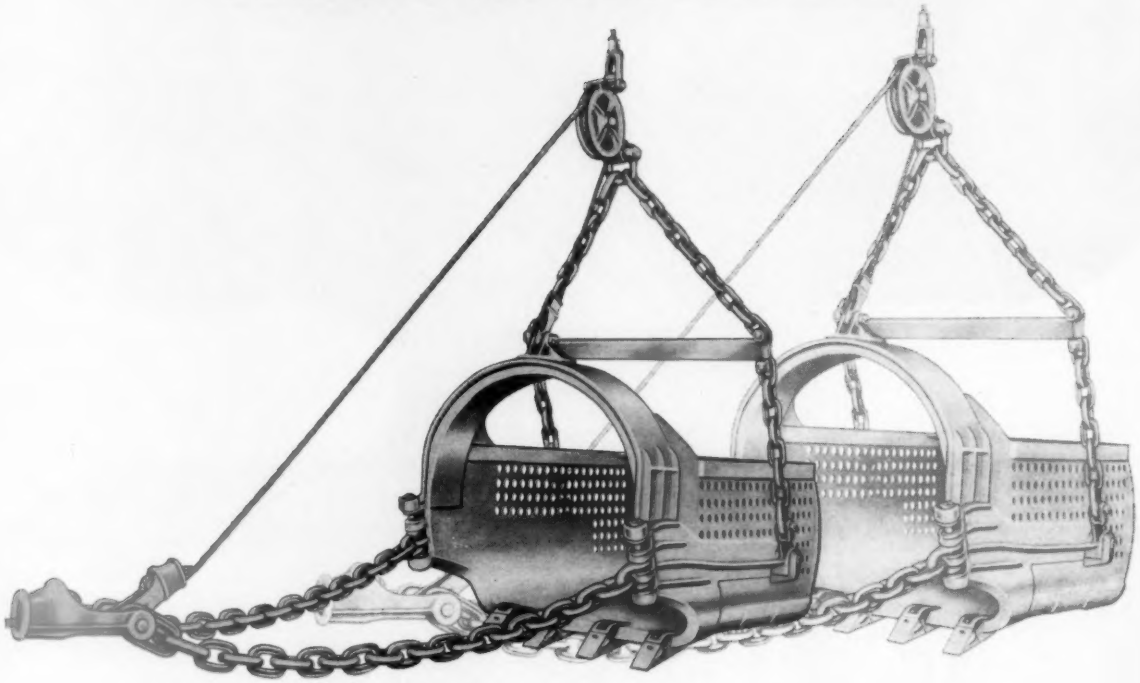
Classifiers can be operated in series to obtain several closely sized fractions in one continuous operation.

buell Norblo

Write: Buell Engineering Co., Dept. 18J, 123 William Street, New York 38, N. Y.

OTHER PRODUCTS: ELECTRIC PRECIPITATORS • CYCLONES • BAG COLLECTORS • COMBINATION SYSTEMS

THE ONLY WAY TO GET MORE BUCKET THAN A HENDRIX



...is to buy two!

- ALL WELDED CONSTRUCTION for greater strength and durability
- LESS BUCKET WEIGHT providing greater capacity without sacrificing strength and durability
- 14% MANGANESE STEEL chains, fittings and reversible tooth points
- PERFECT PERFORMANCE . . . faster loading . . . easier handling . . . cleaner, smoother dumping

Hendrix Lightweight Dragline Buckets

¼ to 40 Cubic Yards Perforated or Solid

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

Fred Gelzleichter, in charge of gravel plant operations, Spickelmier Industries, Inc.

Concrete products plant reports on DEISTER Screen operation:

"EXACT SIZING . . . NOT A PENNY FOR MAINTENANCE"

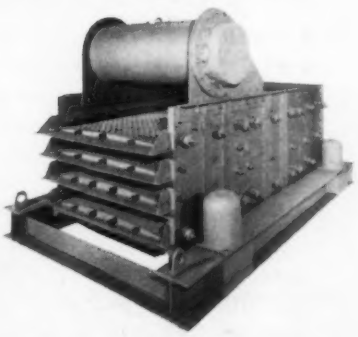
A well-deserved reputation for quality has made Spickelmier Industries, Inc. of Indianapolis one of the largest manufacturers of concrete products in the Midwest. Now in its 51st year, Spickelmier is able to maintain highest quality standards because it strives to control all factors of production from raw material to finished product. This, according to President Carl F. Spickelmier, is the reason why the company began its own sand and gravel plant operation in 1941.

Aggregate production has expanded steadily over the years, and Spickelmier now supplies outside customers as well as its own manufacturing needs from this plant. During the construction season a stockpile of 40,000 tons is kept on hand.

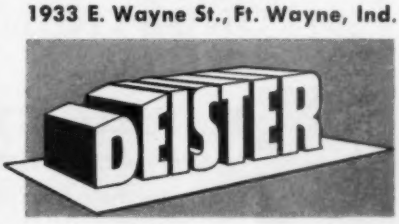
The full plant load of 150 tons per hour is fed to a three-deck 4′ x 14′ Type UF horizontal Deister Screen which was purchased in April, 1960. As the material passes across the screen it is sprayed with water at the rate of 400 gpm.

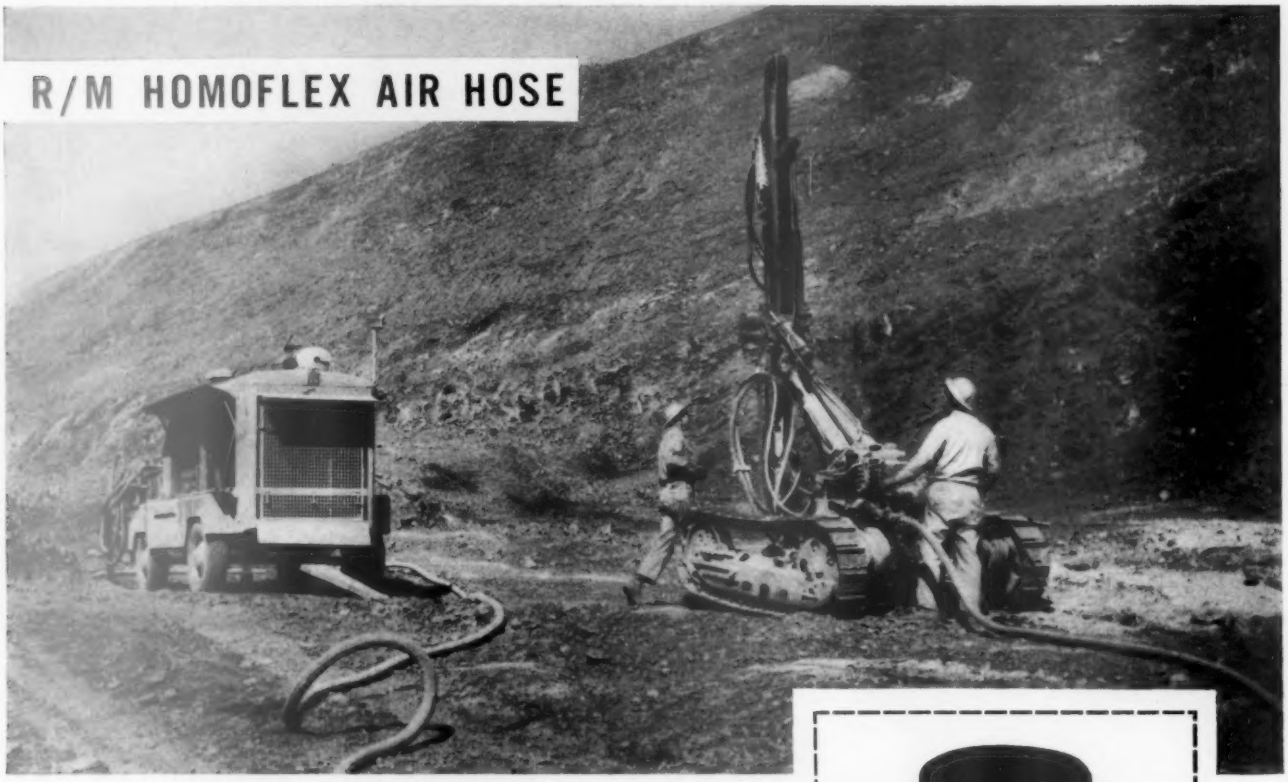
With screen deck openings of 1-1/4″, 9/16″ and 3/16″, the Deister Screen produces four finished aggregate sizes for Spickelmier. In describing this screen's performance, Yard Supervisor Fred Gelzleichter had this to say: "Our specifications call for exact sizing and that's what we get from this Deister. We haven't spent a penny for maintenance since the day it was installed."

Changing screen cloth is a lot faster too, according to Plant Operator Albert Gantz. "We can change the bottom screen on the Deister in about half an hour. On our other screen it takes a whole day to change the bottom screen deck because we must remove the top deck to get to the bottom one. Figure that in terms of production time and you can see why we like the Deister Screen."



DEISTER MACHINE CO.
1933 E. Wayne St., Ft. Wayne, Ind.





Flexible as a Rope...
HOMOFLEX Handles Easier, Lasts Longer in Rugged Work

Only Raybestos-Manhattan offers unique Homoflex construction —to produce a hose that is super-strong yet flexible . . . and weighs less than any other air hose of equal working pressure.

- **SUPER-STRONG**—assures longer, trouble-free service life
- **PRECISION BUILT**—with super-strength, low-stretch cords
- **MANDREL-MADE**—no pre-set twist
- **KINKLESS**—coils and uncoils freely in any direction
- **HOMOGENEOUS CONSTRUCTION**—provides inseparable tube-to-cover bond
- **SAFER, EASIER TO COUPLE**—inside and outside diameters are uniform

Homoflex H. D. Air Hose is also available for extra heavy duty and with *yellow cover stripe* for visibility; also in type for water in mine use. Let your R/M distributor show you how to get More Use per Dollar with R/M hose. Write for Catalog M5.

STRONG—LIGHT—KINKLESS

EXCLUSIVE HOMOFLEX CONSTRUCTION makes strength member and tube virtually inseparable for long, trouble-free service. Uniform inside and outside diameters permit faster, safer, easier coupling—faster, fuller flow.

RAYBESTOS-MANHATTAN, INC.
MANHATTAN RUBBER DIVISION • PASSAIC, N. J.
ENGINEERED RUBBER PRODUCTS

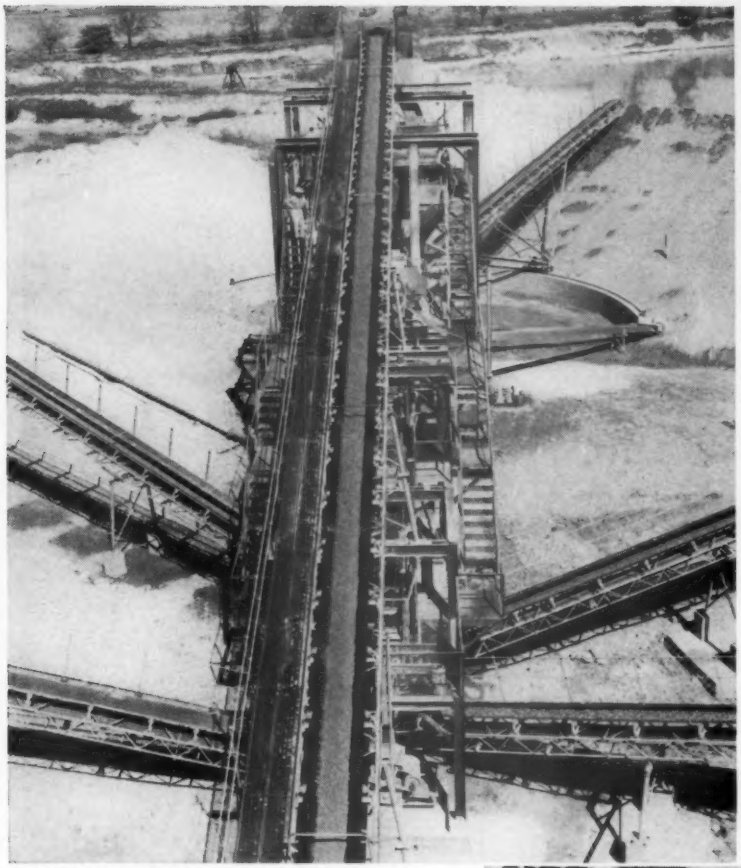


Photo Credit: E. F. Marsh Engineering Co., St. Louis, builders of the conveyors.

RAY-MAN Conveyor Belt
Troughs Deeper, Trains Easier

Ray-Man construction meets the performance requirements for Cantwell Machinery Company conveyors at Marble Cliff Quarries Company's Arrow Sand and Gravel Plant, Columbus, Ohio. Ray-Man has the flexibility and troughability to haul fuller loads—even with small pulleys, reverse bends, snub or take-up pulleys. No breaker is required . . . and Ray-Man *holds* fasteners. Also has exclusive XDC Cover for longer life.

- **HIGH COVER-ADHESION ALL AROUND**—top, bottom, and edges
- **FULL COVER THICKNESS USED**—no breaker needed—longer cover life
- **SPLICES LAST LONGER**—hold fasteners better
- **MORE TROUGHABLE AND TRAINABLE**—highly flexible, double compensated
- **IDEAL FOR 45° IDLERS**—guaranteed against separation at idler hinge line
- **OPERATES ON SMALLER PULLEYS**
- **IMPACT CUSHIONED**—resists ripping

ASK YOUR R/M DISTRIBUTOR ABOUT THE ADVANTAGES OF RAY-MAN FOR YOUR INSTALLATION.

Write for Bulletin M302.

R/M Poly-V® Drive Delivers More Power in Less Space ...With More Reliability

A single, endless V-ribbed belt across full width of sheaves with mating grooves. Gives more power per inch of width and advantages never possible with conventional multiple belt drives.

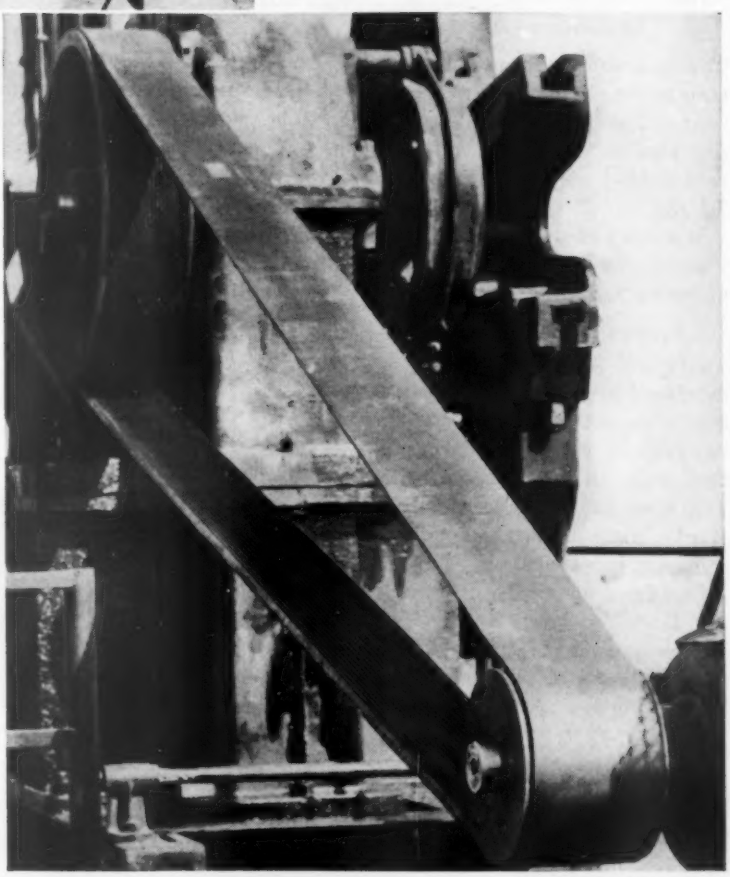
- **SIMPLICITY**—*two* belt cross sections meet *every* heavy duty requirement
- **RELIABILITY**—less maintenance, less take-ups . . . longer belt and sheave life
- **NO MATCHING**—single unit belt eliminates "length matching"
- **BETTER PERFORMANCE**—maintains groove shape, constant pitch and speed ratios . . . runs smoother, cooler

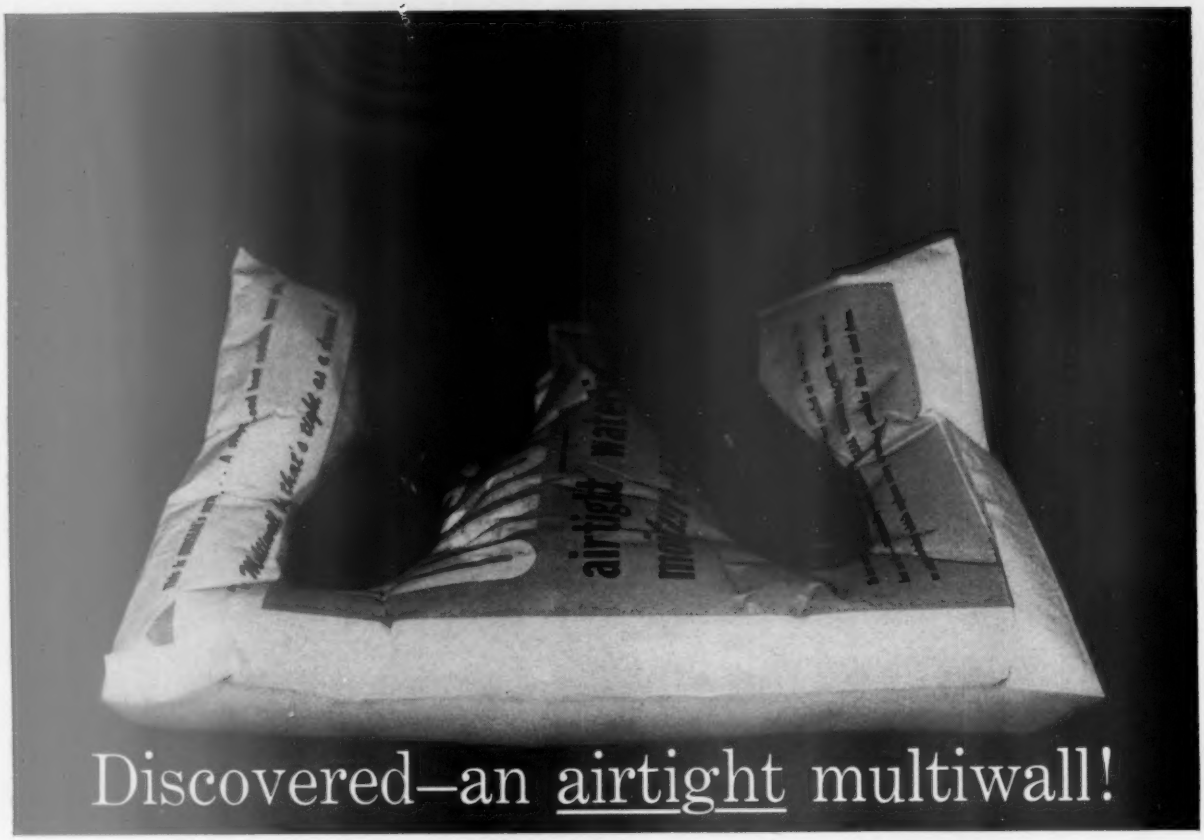
WHEN YOU CHANGE DRIVES CONVERT TO POLY-V* . . . AND BE SURE.

Write for Bulletin M141.

*patented

RM131





Discovered—an airtight multiwall!

Simple demonstration helps solve major packaging problem for Dow Chemical

The multiwall bag you see here contains nothing but air. The man standing on it weighs 200 lbs. Yet no air can escape. *That's because the bag is Union-Camp's amazing new UNISEAL.*

It ended a two-year search by Dow Chemical for a package that would provide a perfect vapor barrier.

Protection problem critical

The search began when Dow first developed an effective new crab grass killer. To successfully market this new product, an unusually tight package—even air-tight—was essential. The ideal package also had to be sturdy, printable, easy to handle and ship. And economical.

One day Dow engineers witnessed the UNISEAL demonstration you see above. If the bag could lock in air, then it must have the perfect vapor barrier. Further testing proved they were right.

Seals safely—and saves, too

The remarkable new UNISEAL bag features four plies. An outer sheet of semi-bleached paper (for top printability). Two middle plies of kraft. And an inner ply of kraft laminated to aluminum foil with polyethylene. A final extrusion coating of polyethylene resin over the foil serves as the heat-sealing medium for the inner seam and bottom.

The bag can easily be filled on *any standard filling equipment.* A special machine heat-seals the inner ply and applies adhesive to the tops of the outer plies. It then folds over the lip and pastes it to the outside of the bag. Finally, the machine centers a strip of gum tape over the edge of the lip to form a positive *air-tight* closure.

Apart from providing a perfect vapor barrier, Union-Camp's UNISEAL bag also turned out to be the least expensive container of any previously tried!

UNISEAL'S unique inner ply is made of kraft paper laminated with polyethylene to aluminium foil. Bags can be easily filled on any standard filling equipment.

Secret of sealing. Special machine heat-seals inner ply, folds lip over and pastes to outside of bag. Finally, gum tape is applied (arrow) forming a positive air-tight closure.

How much could a Union-Camp multiwall idea save you?

Hundreds of companies, large and small, have cut costs through Union-Camp multiwall ideas like this. Our comprehensive packaging service—5-Star Plan—covers bag construction, design, specifications control, packaging machinery and a survey of your plant. And it's free.

See your local Union-Camp multiwall man for complete details.

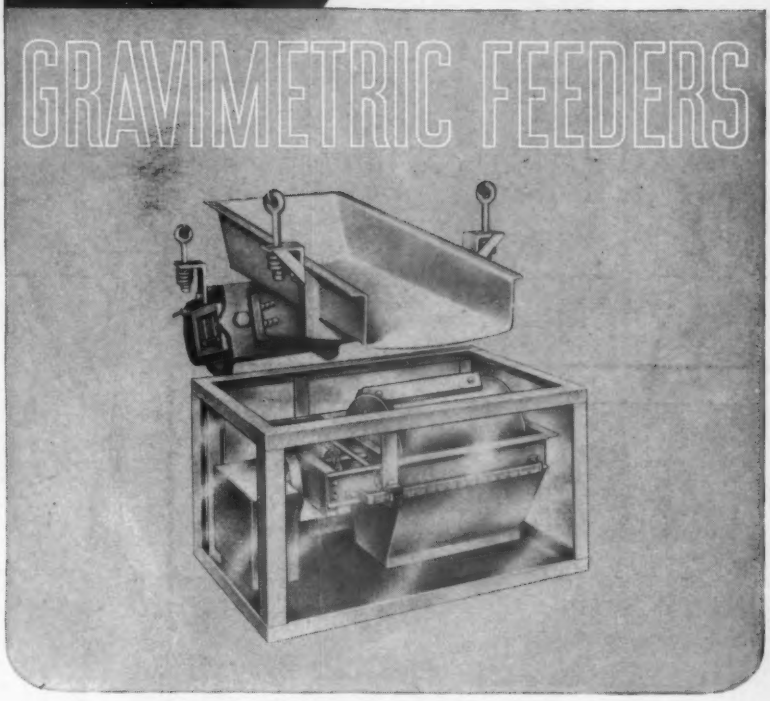
FREE 16-PAGE BOOKLET shows how packers like yourself have achieved greater economy in their multiwall packaging operations. Write Dept. M-4.

UNION-CAMP
MULTIWALL BAGS
Union Bag-Camp Paper Corporation · 233 Broadway N.Y. 7, N.Y.

for accurate, continuous feeding of bulk materials

SYNTRON **WEIGH WHEEL**

GRAVIMETRIC FEEDERS



increase the capacity and efficiency of your operation

A new idea in weigh feeding bulk materials has been developed by Syntron. The unique "Weigh Wheel" gravimetric Feeders designed for accurate, continuous, dependable weigh feeding of materials to mixers, dryers, and other processing equipment.

Their simple design and accurate, dependable weigh control of feed flow increase the capacity and efficiency of end products.

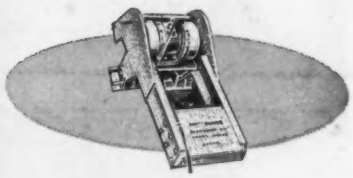
The applications for Syntron "Weigh Wheel" gravimetric Feeders in industry are wide and varied.

Syntron "Weigh Wheel" gravimetric Feeders are available with maximum capacities for every application from 500 pounds to 300 tons per hour.

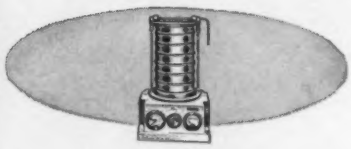
Let Syntron solve your weigh feeding problems. Write for free informative literature today.

SYNTRON SYNTRON SYNTRON SYNTRON SYNTRON SYNTRON SYNTRON SYNTRON SYNTRON SYNTRON

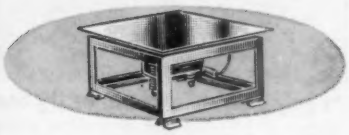
Other SYNTRON equipment of proven dependable quality



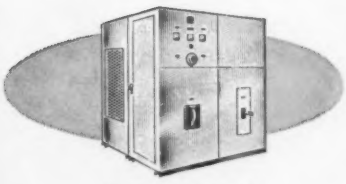
Car Shakers



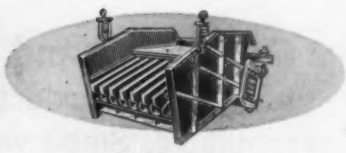
Test Sieve Shakers



Packer & Jolters



Rectifier Power Units



Grizzly Screens

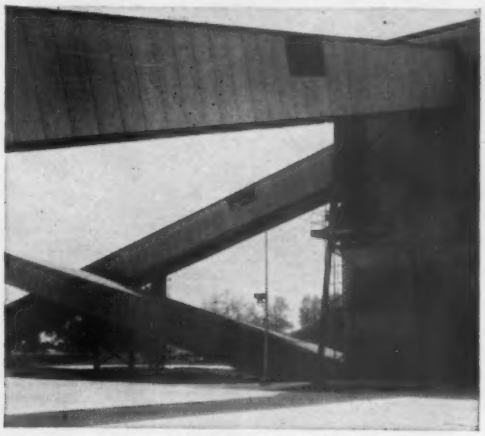
SYNTRON **SYNTRON COMPANY**
385 Carson Avenue • Homer City, Pa.

US AT THE HEART OF INDUSTRY...

"I only wish we'd known of US Searle Sleeves sooner," reports Massachusetts Broken Stone Co., annual producers of 500,000 tons of crushed stone and bituminous concrete. "These Searle Sleeves have given perfect results, eliminated hours of breakdown, seem wearproof. They keep idler rolls and conveyor belts clean, eliminate belt 'wandering' and edgewear."

SS 102

For mining and construction men across the land, US Industrial Rubber Products are helping make tough jobs easier, faster, and more profitable. Small wonder that US is the largest producer of industrial rubber products in the world.



Six men and a group of US Conveyor Belts handle over 2,450,000 tons of material a year to keep a 6-million-barrel-a-year Dundee cement plant running. These belts withstand the abuse of clay, coal, gypsum, and finished cement . . . are one of the reasons why Dundee produces at a lower cost than the national average.

CB 104

Performing perfectly under one of the toughest applications for any belt—an atmosphere of stone dust and flying rock particles—U.S. Royal V-Belts have outlasted all other belts at Bethayres Concrete Products, Pa. These belts have demonstrated unequalled toughness, length stability, and smoothness despite the severe conditions under which they must perform.

VB 114

The only hose built like a tire, U.S. Royal Cord Air Hose amazed builders of a large aluminum plant in Texas by its ability to withstand abuse. Lying unprotected on a road surfaced with abrasive sea shells, the hose was continually run over by heavily loaded trucks and even 50-ton cranes—showed no damage even when carrying full working pressure.

H 108

For every industrial rubber product need, turn to US. For Conveyor Belts, V-Belts, the original PowerGrip "Timing"® Belt, Flexible Couplings, Mountings, Fenders, Hose and Packings . . . custom-designed rubber products of every description. Discover why U.S. Rubber has become the largest developer and producer of industrial rubber products in the world. See your U.S. Rubber Distributor or contact US directly at Rockefeller Center, New York 20, N. Y.

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

United States Rubber

MECHANICAL GOODS DIVISION

DSM Screen in operation for Pabco Gypsum at Apex, Nevada.

HIGH CAPACITY DORR-OLIVER

DSM SCREEN

aids development of Pabco's big gypsum deposit

Producing high grade gypsum from a vast Nevada deposit now being worked by the Pabco Gypsum Division of Fiberboard Paper Products Corporation involves a new washing system for separating clay from the selenite crystals.

Separation is achieved by screening. The unique new Dorr-Oliver DSM® Screen with its wedge bar design was selected to handle the 65-mesh separation because of its unusual efficiency and simplicity. Virtually all the clay and slimes are eliminated from the plus 65 mesh gypsum at this point.

Recovered product is centrifuged and heat dried to a moisture content of less than 1%.

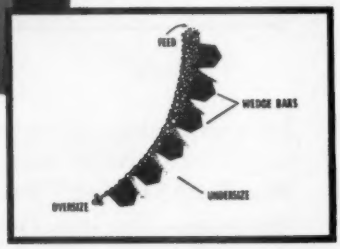
Other Dorr-Oliver equipment includes the 45 ft. dia. thickener, valued additionally because it facilitates the saving of much valuable water for recirculation through the washing system. Underflow is metered from the thickener by means of Dorr-Oliver diaphragm pumps.

For further information, including application data, write to Dorr-Oliver Incorporated, Stamford, Connecticut.

The Dorr-Oliver DSM Screen is essentially a curved, wedge bar type screen, with provisions for feed inlet, oversize discharge, and undersize discharge. Slurry is fed tangentially onto the upper surface of the screen. On contact with the screen, the undersize fraction is retarded and directed downward through the slots.

Separations in the 8- to 100-mesh range are feasible at capacities greatly in excess of conventional screens. Essentially non-blinding. No moving parts. Low maintenance.

Successful applications also include the screening of heavy media, potash and taconite.



DORR-OLIVER

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

Some 20 miles away from the airfield, Celli's TECs are loaded in a jiffy — by hoppers or front-end loaders. Each makes 5 or 6 trips a day.

Aluminum HEIL-TEC Dump Trailers *Increase Payloads 5,000 lb.*

for Celli Trucking Company

Celli Big User of HEIL Equipment

All told, Celli has 27 aluminum and 16 steel HY-TEC trailers; 6 Heil bulk cement transports; 4 Heil petroleum transports and 23 Heil dump bodies.

Two of Celli's 6 Heil bulk cement transports.

"High-flying" TEC trailers help maintain stockpiles of sand and gravel for expansion of airfield. Two of Celli's aluminum trailers dump sand here in double-quick time.

The live-wire Celli Trucking Company, Schiller Park, Illinois, has boosted payloads of sand and gravel with fleets of both aluminum and steel HEIL HY-TEC frameless dump trailers.

"Our aluminum HY-TEC trailers give us about 5,000 lb more payload than the steel units we had several years ago," says Gene Celli. He has ten 30-yd and seventeen 26-yd units.

He also hauls several-thousand-pound bigger loads in his steel TEC units than in his previous conventional steel dump units — has four 30-yd and twelve 26-yd steel HY-TECs.

Mr. Celli praised the fine stability of a TEC with its twin-draft arms — permitting operation on rough terrain and holding the body firmly during dumping cycle, even while jackknifed.

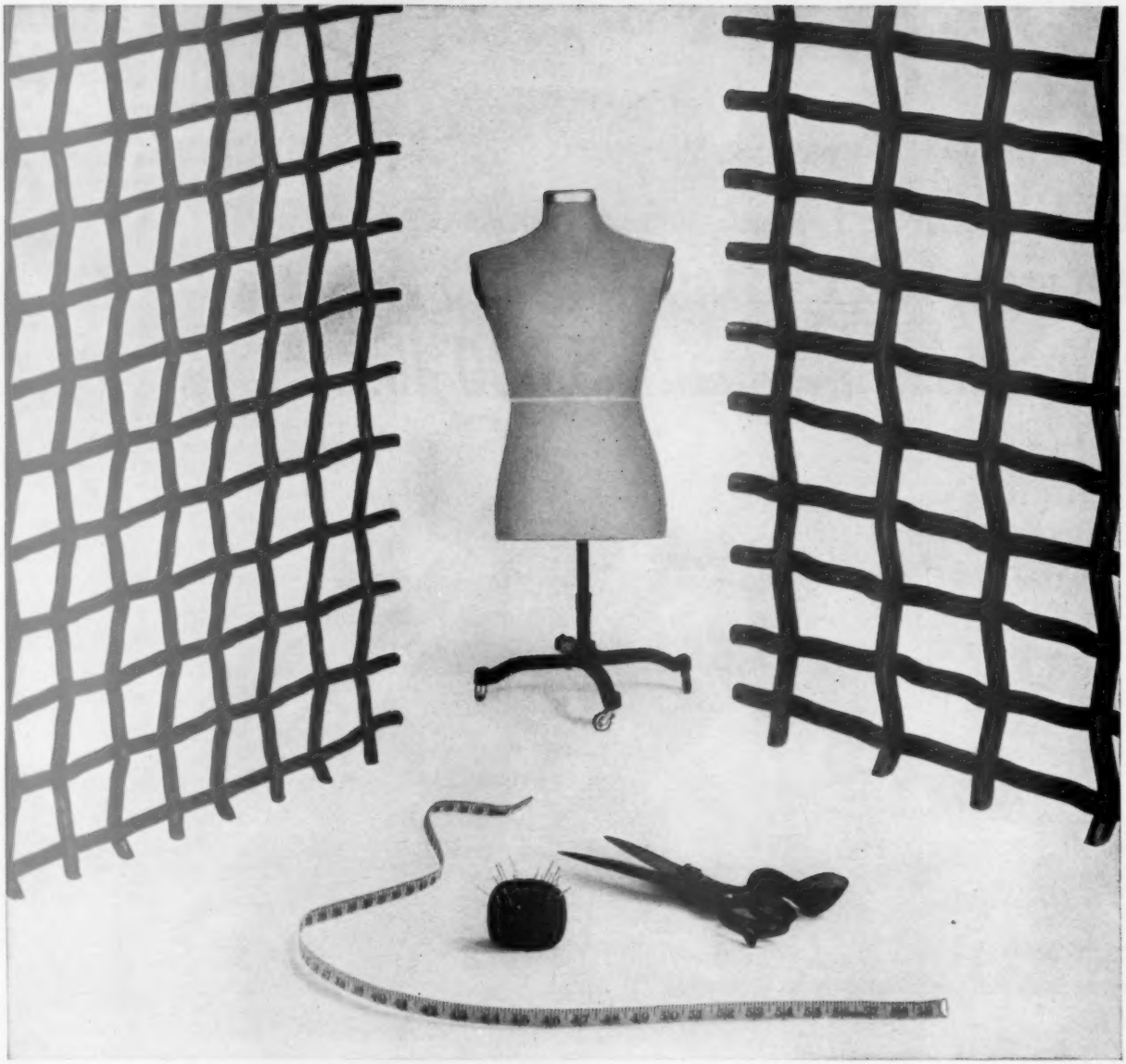
Low maintenance, more hauling time, bigger payloads — these HY-TEC advantages will make your hauling more profitable, too.

The HEIL-TEC distributor in your area will be glad to discuss your needs — every TEC unit is engineered for the kind of applications you specify and for the area where it will operate.

TEC Division **THE HEIL CO.**

DUMP BODIES and HOISTS

TEC Division, 1285 West 70th Street, Cleveland 2, Ohio



Tailor-made to fit your needs...
CF&I Space Screens

Space screens are like suits — they not only have to be the right size, but they have to wear well, too. That's why CF&I Space Screens are your best buy.

To make sure that you get a screen that fits your operation perfectly, CF&I produces virtually every size and type of weave. If one of our standard screens won't do the job, we'll be glad to tailor-make a screen to your exact specifications.

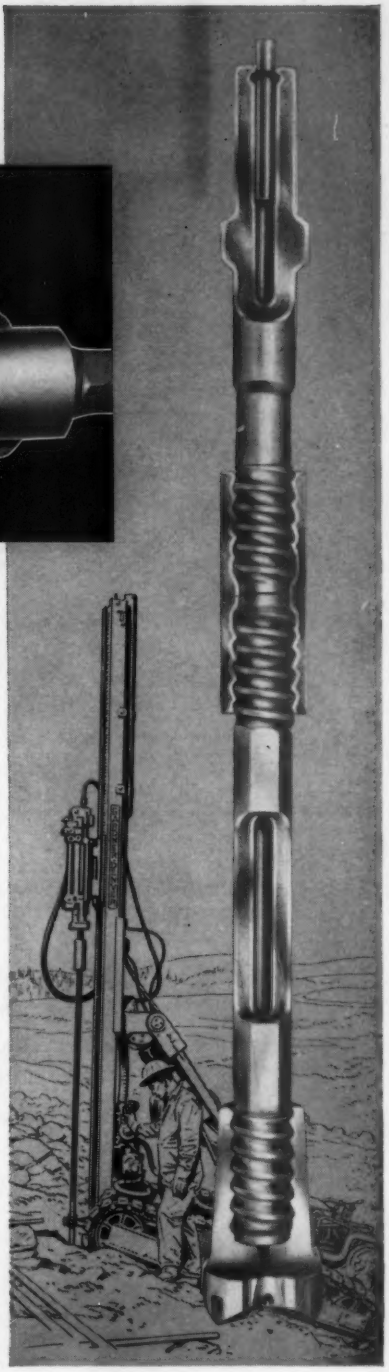
To assure you a screen that "wears like iron," CF&I uses only the finest quality steel wire and weaves it on giant hydraulic looms. This produces tight wire intersections so that the screens will retain their size and shape of openings under the most punishing vibration and abrasion.

The result is a screen that is more economical because it cuts your equipment downtime and lowers the cost-per-ton of material screened.

Your CF&I representative will be glad to study your operation and recommend the screen that best meets your requirements. Call him today. 8397

The Colorado Fuel and Iron Corporation
Denver • Oakland • New York
Sales offices in Key Cities

GARDNER-DENVER HI-LEED® STEEL



Prove it on your jobs —easiest to uncouple

On job after job, Gardner-Denver's HI-LEED sectional rod proves itself. It always uncouples readily. It saves time coming out of the hole. You can save time adding new steel in drilling hole. You profit by all these HI-LEED advantages:

Reduces steel breakage—less downtime due to losing steel and bit in hole. Fewer lost holes. Lowers cost of steel and bits.

Prevents lost holes—because HI-LEED design keeps mating parts snug; rods won't uncouple in the hole or while pulling out.

Sends more impact to the bit—because rod and coupling threads are in close contact over a large total area; rod ends are held firmly together.

Drills more footage per rod—because steel is carburized and shot-peened; wide-thread peak assures maximum wear.

These outstanding features of HI-LEED steel can help save your profits. Test HI-LEED steel on your drilling jobs. Want more details? Ask your Gardner-Denver Rock Drill Specialist, or send for Bulletin HLDS-1.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois—Offices in principal U.S., Canadian and Mexican cities
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Ave., Toronto 16, Ontario
International: Gardner-Denver International Division, 233 Broadway, New York 7, N. Y.

International Offices: Buenos Aires, Argentina; Artarmon, N. S. W. Australia; Brussels, Belgium; Rio de Janeiro, Brazil; Santiago, Chile; Barranquilla, Colombia; Lima, Peru; Ndola, N. Rhodesia; Salisbury, S. Rhodesia; Johannesburg, Transvaal.

Enter 193 on card, page 177

FLO-GEL and FLO-GEL HD

NEW EXPLOSIVES FOR QUARRY AND OPEN-PIT BLASTING

Flo-gel (pronounced FLOW-GEL) and Flo-gel HD are non-nitroglycerin gelatin type explosives that provide high loading densities where concentrated loads are needed.

Some of the advantages of using Flo-gel and Flo-gel HD are:

1. More energy per foot of bore hole with higher loading densities.
2. Increased energy (as much as 20%) may permit greater spacings and burden.
3. Improved fragmentation because of high rate of detonation coupled with increased energy.
4. Wet holes may be preloaded.

FLO-GEL AND FLO-GEL HD

contain no nitroglycerin • are nonheadache producing • are insensitive to blasting caps • will not detonate from rifle bullet impact • will not propagate from hole to hole • will not drain off in rock fractures • provide high loading densities • possess excellent water resistance

Ask your Hercules representative for details on how Flo-gel and Flo-gel HD can save you money in your blasting operations.

HERCULES POWDER COMPANY
INCORPORATED

Explosives Department, Hercules Tower, 910 Market Street, Wilmington 99, Delaware

XR61-4

•Hercules Trade Mark

BIRMINGHAM • CHICAGO • DULUTH • JOPLIN • LOS ANGELES • NEW YORK • PITTSBURGH • SALT LAKE CITY • SAN FRANCISCO

Leaders in limestone loading

These 93-M shovel twins are half of a Marion foursome that help keep hundreds of tons of limestone rolling out of this Illinois quarry every day.

Despite their size—both pictured machines carry 2-1/2 yard dippers—these massive diesel units have the built-in agility and short cycle time of smaller machines. Uncomplicated, muscle-multiplying Marionair control gives the operators wrist action control of all machine functions... lets them crowd, swing and dump in one smooth, fast operation.

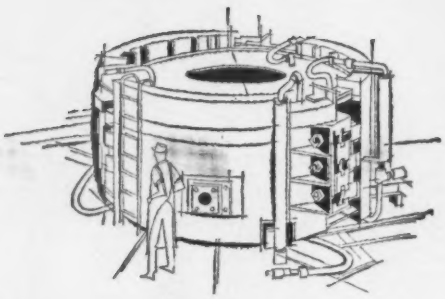
Here are units that are big and strong in the right places to keep downtime at an absolute minimum... machines with a design simplicity that makes high maintenance costs a thing of the past... profit-oriented machines that will still be carrying their share of the load years from now.

Write for bulletin 397-H today. Better yet, let a Marion mining expert explain the reasons why the 93-M will probably make dollars—and sense—in your quarry operation.

You get MORE WITH MARION

MARION POWER SHOVEL CO., MARION, OHIO

A Division of Universal Marion Corporation



Miss Southern Tire Announces:

Something BIG!

World's Largest Retreading Mold

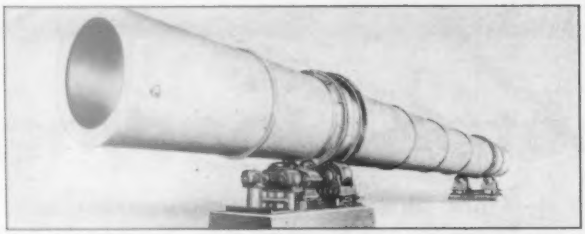
Southern Tire Company now offers the largest production capacity and range of sizes of any retreading shop in the world. New equipment enables Southern Tire to retread sizes no other plant can handle. Southern's new giant-tire mold, occupying an area of 2000 square feet, can handle the following sizes: 26.5 x 29, 29.5 x 35, 3000 x 33, 33.5 x 39 and 37.5 x 33.

For quality rubber, on-site pick-up and delivery, specify an Independent — specify Southern Tire.

SOUTHERN TIRE COMPANY
1414 Broadway
SHEFFIELD, ALA.
Phone Collect
EV 3-2312

Enter 196-A on card, page 177

IF YOU ARE READY FOR A NEW ROTARY KILN . . . COOLER . . . DRYER



CHECK THIS NEW CONCEPT FIRST— DESIGNED AND BUILT BY VULCAN

A Vulcan kiln in your operation will simplify your foundation plans, lower your cost of erection and reduce your power load . . . all contributing toward substantial savings in your original investment. These advantages are made possible because of these exclusive patented features that are included in every new Vulcan Rotary kiln, cooler or dryer. New self-aligning trunnion rollers, New constant thrust load control, New pressure lubricating, New integrated girth gear and riding ring. Why not write today for Vulcan's new 10 page brochure, illustrating and describing the complete unit in detail.

"The Oldest Name in Rotary Kilns—Since 1849"

VULCAN IRON WORKS, INC.

MEMBER: National Limestone Institute, Inc.

WILKES-BARRE, PA. — CABLE ADDRESS: VULWORKS
ROTARY KILNS—COOLERS—DRYERS—SUGAR MILLS—SHEAVES
VERTICAL LIME KILNS—CALCINERS—ELECTRIC HOISTS—24' GEARS

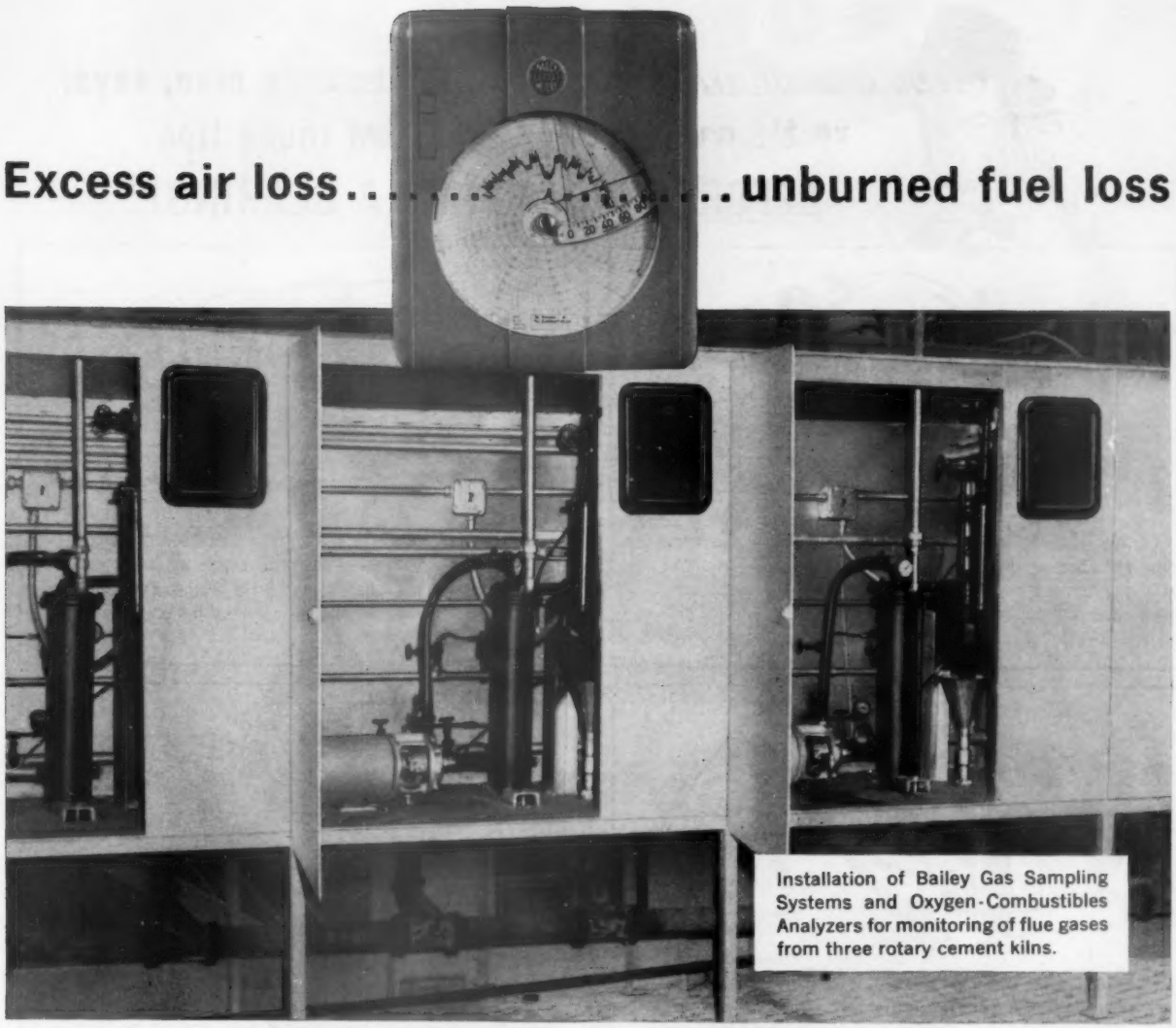
Enter 196-B on card, page 177

Kiln tires, such as shown above, up to 14'-0" x 27", are cast in 4 pieces at the Bethlehem Foundry and preassembled at the shop to assure accurate, economical reassembly in the field. Exceptionally accurate alignment is assured by the tongue and groove machining and the use of fitted pins in reamed holes at final assembly.

BETHLEHEM
CORPORATION — EST. 1856
CEMENT MILL MACHINERY DIVISION
225 W. SECOND STREET, BETHLEHEM, PA.

Enter 196-C on card, page 177

Excess air loss.....unburned fuel loss



Installation of Bailey Gas Sampling Systems and Oxygen-Combustibles Analyzers for monitoring of flue gases from three rotary cement kilns.

YOU MUST KNOW BOTH – continuously

... to get best combustion efficiency with a rotary kiln

How much profit is going up the stack every day in unburned fuel? Or are unburned combustibles kept low at the price of heat loss from too much excess air?

Your flue gas tells the story. And the only practical way to know these losses and control them is by continuous analysis of flue gases.

The Bailey Oxygen-Combustibles Analyzer-Recorder performs this monitoring of both unburned fuel and excess air simultaneously and continuously, and records both on a single chart. It permits maximum combustion efficiency to be obtained by maintaining combustion air at the optimum point for each kiln. In addition to effecting savings in fuel costs—more and more important today—accurate control of combustibles helps to prevent ring formations on some kilns. Ask your Bailey engineer, or write, for complete details.

C160-1

CEMENT DIVISION

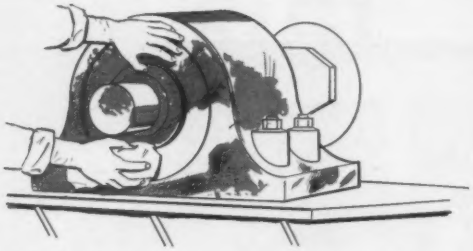
BAILEY METER COMPANY

1051 IVANHOE ROAD • CLEVELAND 10, OHIO

In Canada—Bailey Meter Company Limited, Montreal

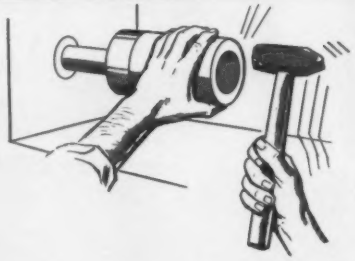
DISTRIBUTOR DAN, the SKF bearing man, says:
"Save this page and read these tips
BEFORE YOU CHANGE A BEARING!"

DON'T DISTURB A BEARING unless it's absolutely necessary. Most bearings give excellent service, year after year. When you remove a perfectly good bearing, you run the risk of damaging it or scoring the shaft or housing seat.



ALWAYS CLEAN THE HOUSING. Dirt and grime sometimes conceal tapped or unthreaded holes that enable you to use jack screws or knock-out pins to remove the bearing. Sometimes, bolts in the housing permit you to remove the bearing after you force out the shaft.

PRESSES AND PULLERS PREFERRED. Always use an arbor press or bearing puller to remove a bearing. They'll help you apply uniform pressure around tight-fitting rings. And never strike a bearing unless there's no alternative.



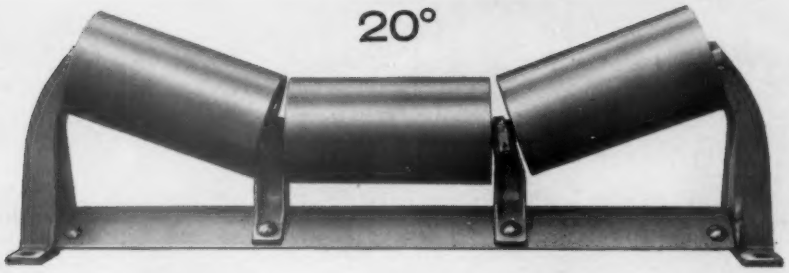
IF YOU MUST HIT A BEARING, don't strike its surface directly. Hold a sleeve against the correct ring. Aim the blow against a solid part of the ring, not against flanges. And aim the blow as squarely as possible to prevent cocking.

HANDLE EVERY BEARING CAREFULLY. Dismount it as though you plan to reuse it. Don't clean the bearing if it is to be examined for defects or signs of malfunctioning. Wrap it exactly as removed, otherwise you may destroy evidence of the operating conditions.

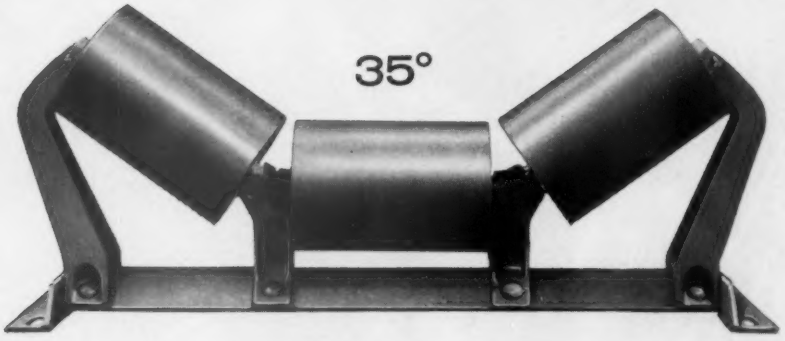
THE BEST BEARING BARGAINS BEGIN WITH THE SERVICES OF AUTHORIZED SKF DISTRIBUTORS.

SKF MOTION ENGINEERING

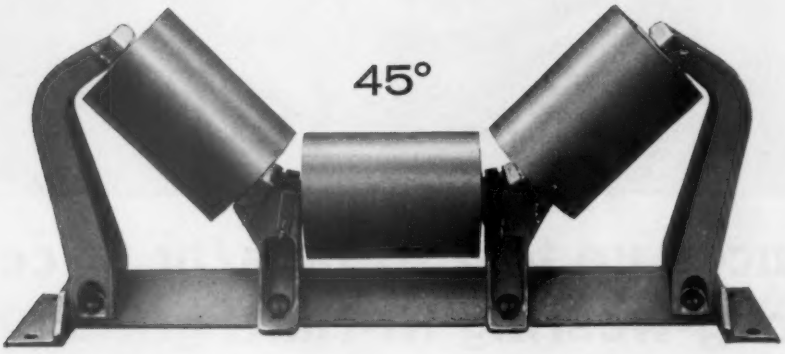
Advanced ball and roller bearing technology



which PERMASEAL® idler



is best for your job?



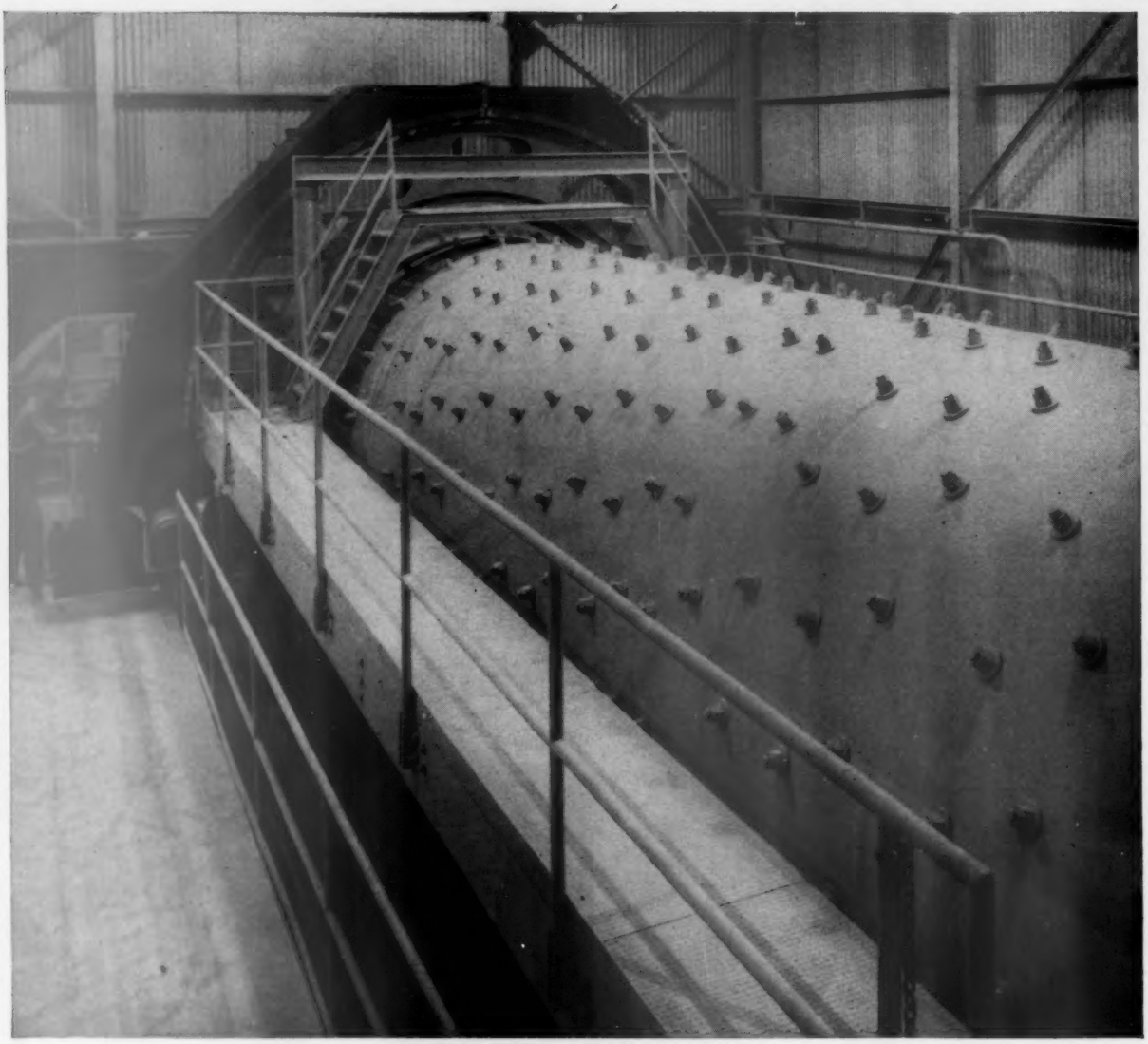
There's a PERMASEAL Idler to perfectly match your belt conveyor requirements. A broad line, plus skilled engineering help, enables you to select the idler that exactly meets your needs. No need to over- or under-design. Power requirements are minimized. Double, flexible diaphragm seals keep grease in the rolls, dirt out. Protect bearings for years. Accurate roll alignment and rugged construction provide long maintenance-free life for idlers, as well as conveyor belts.

PERMASEAL Medium Duty Idlers are available with end rolls inclined at 20°, 35° and 45°; Heavy Duty Idlers at 20° and 35°. In addition to the standard troughing idlers shown here, the PERMASEAL line includes Picking Belt Idlers, Impact Absorption Troughing Idlers, Flat Belt Carrying Idlers and Return Idlers—all types and sizes, for general and extra-heavy duty service. PERMASEAL Idlers handle belt widths up to 72″.

Call your nearest Jeffrey distributor, or write for Belt Idler Catalog 996. The Jeffrey Manufacturing Company, 917 North Fourth St., Columbus 16, Ohio.

JEFFREY

If it's conveyed, processed or mined, it's a job for Jeffrey



Produces up to 250 bbls/hr of cement with long-wearing Ni-Hard grinding balls

This excellent day-after-day production at the Kansas City plant of The Missouri Portland Cement Company of St. Louis is due to the modern design of the mill and to the efficiency of Ni-Hard* nickel-chromium white iron grinding balls.

The new mill has a short (10-foot) first compartment to complete preliminary grinding of the 5/8 inch clinker. A 23-foot second compartment which contains 1 and 1¼ inch Ni-Hard grinding balls does the all-important final reduction.

Ni-Hard grinding balls finish grind so well that the plant's chief engineer says, "The mill charge remains in perfect condition as to size and shape for months, even years. No longer do we experience losses in grinding capacity."

The 10-foot diameter mill also has a Ni-Hard lining, which after 14 months of operation, still looks brand new. Missouri Portland anticipates 15 years of life for these liners (three times the life of previously used materials).

For superior abrasion resistance and high mill efficiency, specify long lasting Ni-Hard grinding balls and Ni-Hard mill liners. For further information and a list of Ni-Hard producers, contact your local Inco representatives or send for the booklet, "Engineering Properties of Ni-Hard."

*Registered Trademark

THE INTERNATIONAL NICKEL CO., INC.

67 Wall Street INCO New York 5, N. Y.

INCO NICKEL

NICKEL MAKES ALLOYS PERFORM BETTER LONGER

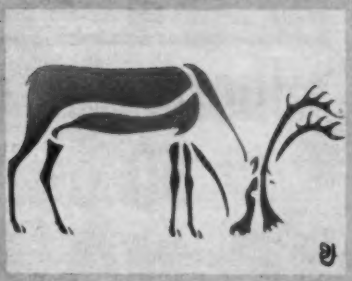
LET YOUR GREETINGS HELP A CHILD

#405 BEMELMANS –
"CAROL SINGERS" –
10 cards of one design

#402 FRANCOIS –
"A CHILD'S WORLD" –
Two each of five designs

#401 GOTTSCHO-SCHLEISNER
– The United Nations
– 10 cards of one design

With every UNICEF Greeting Card you send, you are investing in the future of children somewhere in the world who need your help. Through the United Nations Children's Fund, the proceeds from as few as two boxes can mean 20 children cured of yaws, or 100 children protected against tuberculosis. How truly the spirit of Christmas is captured when you know that your holiday greetings to friends and loved ones have helped make children somewhere in the world healthier and happier.



#403 CAPE DORSET ESKIMOS –
"ARCTIC LIFE" –
Two each of five designs

#407 CHUGHTAI – "THE STAR"
– 10 cards of one design

FILL IN AND MAIL COUPON. All cards are $1.25 for a box of ten with matching envelopes and bear a Season's Greetings message in the five official languages of the United Nations. To see the complete selection of UNICEF cards in full color, write to the same address for an illustrated brochure.

U.S. COMMITTEE FOR UNICEF – GREETING CARDS
P.O. BOX 22, CHURCH STREET STATION
NEW YORK 8, NEW YORK

- ☐ #407 CHUGHTAI – "The Star" – 10 cards of one design
- ☐ #401 GOTTSCHO-SCHLEISNER – The United Nations – 10 cards of one design
- ☐ #405 BEMELMANS – "Carol Singers" – 10 cards of one design
- ☐ #403 CAPE DORSET ESKIMOS – "Arctic Life" – Two each of five designs
- ☐ #402 FRANCOIS – "A Child's World" – Two each of five designs

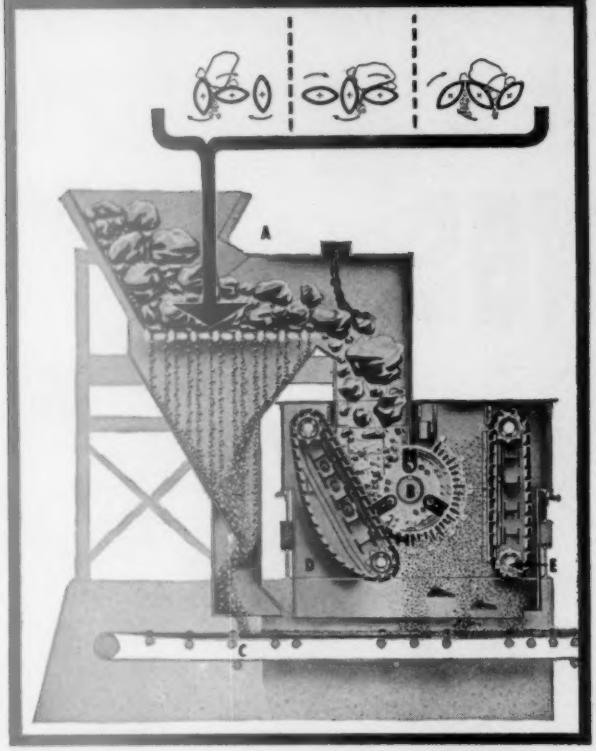
TOTAL BOXES_____ @ $1.25 per box $_____

NAME_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

New Wobbler Feeder-Hammermill combination



Increases capacity 50 to 100%

The exclusive Universal Wobbler Feeder (patented) and Bulldog Hammermill combination was engineered for one of the world's largest cement mills to average 600 tons per hour. It can increase *your* capacity up to 100%! Here's why.

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1—93S car unloader (pit type)
3—36" Linkbelt loading booms 28' long
1—36" Belt drive only
3—36" Linkbelt portable conveyors
4—PL-11 elevating conveyors
981'—30" Joy slope belt complete (like new)
62'—36" belt conveyor complete
23'—48" belt conveyor complete with magnetic pulley
1—14', 101', 20', 62'—36" wide conveyors complete
1—73', 57', 21', 39', 48', 32', 30', 32'—24" conveyors complete with motors
1—48', 18" wide belt conveyor complete
1—MTB-30 Joy drive
60'—34" belt conveyor less head & tail
40'—16x8x6 bucket conveyor
20'—9x7x8 bucket conveyor

STRIPPING EQUIPMENT

2—Twin Murphy diesel engines #220 & 224
1—Worthington 105 cu. ft. compressor
1—22B Bucyrus shovel, 1—21 SH scraper
1—603 Lima shovel and 2¾ yd. Lima and 1—1 yd. Lima
2—HD-21 tractor and 2—D8's with comp. and drills
2—Draglines 1—3W and 1—6W
4—McCarthy and Hardsog highwall drills
1—L30 Lorain 1½ yd. dragline
1—Hobart 300 amp. welder
1—Model 8 Northwest dragline & 600 shovel
1—#95 Northwest dragline
3—TL-25J Lorain ¾ yd. & ⅝ yd. Lima
3—Hardsog Horizontal drills and 2 Sullivan drills
1—S-18 & 1—S-12 Euclid scraper and #70 Cat scraper
6—Wagon drills and 1 Heugh 2¼ yd. loader
1—¾, 3½ & 6 yd. dragline bucket and ⅝ yd. clamshell
2—200W draglines 7 yd. & Fergusen 50 ton roller
1—Page dragline 7 yd. & 2—750B shovels, 17 yd. buckets
7—D-7 & D-8 Caterpillars and 1 Oliver FD
1—Low Boy & D-4 tractor
2—Compton augers Model 48 & 56
4—P&H's 1055, 655B, 255A & 700
2—93M Marion dragline 3¼ yd. bucket and 93M shovel
1—111M Marion 3½ yd. shovel
1—#362 Marion 2½ yd. shovel & 1—40A Marion
4—Jack hammers and 1—6" Jaeger pump
2—10 ton Gallon rollers & 1 Buda vertical drill
1—#1005 Koehring 2½ yd. shovel
1—120I Lima 3½ yd. shovel
1—20 yd. Garwood scraper
1—#125 Jaeger compresser
2—Smith concrete mixers on Ford Tandem

VIBRATORS

1—3x12 Nordberg D. Deck & Simplicity
2—Robbins 5x14 D/D Eliptex
2—4x10 Gyro D/D and AC ripple flow
1—6x16 Link Belt 3/D
2—5x14 Hewitt D/Deck 2 yrs. old
2—3x10 S/D Simplicity
1—6x13 Allis-Chalmers D/D ripple flow
1—4x12 Seco double deck
1—Robbins & 1-A/C 6x16 2 deck & 1 deck
2—Tyler D/D 5x14 with 10HP motors

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16x20, 16x40, 16x24, 20x60, 28x60, 20x44, 20x42. 12x12, 8x8, 12x16, 10x16, and 12x16. 1—steam jenny, 1—large lathe, 1—small lathe, 1—air compressor, 1—heavy duty press, 1—hydraulic press, 1—Lincoln 300 amp welder, 2—bench grinders, 2—acetylene torches complete.

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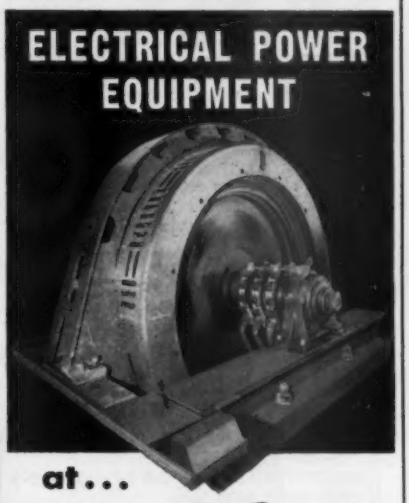

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1000	900	Al.-Ch.	2300	ANY
700	720	G. E.	440	I-M
600	1800	G. E.	4160	M-6345
500	1200	G. E.	440	M-6345Z
400	1200	West.	2300	CW
400	720	G. E.	440	MT-573Y
350	1800	Al.-Ch.	2300	ARYW
300	900	G. E.	440	IM-17

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1250	West.	4160/2300	250
1000	West.	4160/2300	250
750	G. E.	4160/2300	250
600	G. E. (3 unit)	2300/440	125/250
500	G. E.	2300	250
400	Al.-Ch.	2300/440	125/250
250	G. E.	2300	250
200	G. E.	2300	250
150	West.	440	250

D.C. MOTORS

HP	RPM	MAKE	VOLTS	TYPE
1500	300	West.	250	TEFV
850	250/500	West.	250	GM
600	250/500	G. E.	600	DBL.ARM.
500	210	G. E.	250	MCF
400	1150	REL.	250	T-1970
400	300/900	G. M. (2)	250	D4D
300	575/1150	West.	250	CB-509
200	700	West.	250	SK-201
150	380/1000	G. E.	250	MCF
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2—CEDARAPIDS 60" x 16'0" Triple Deck Horizontal Screens with Drives—s/n 22202 and 22203

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1—15 HP 1800 RPM Electric Motor and Starter for Feeder

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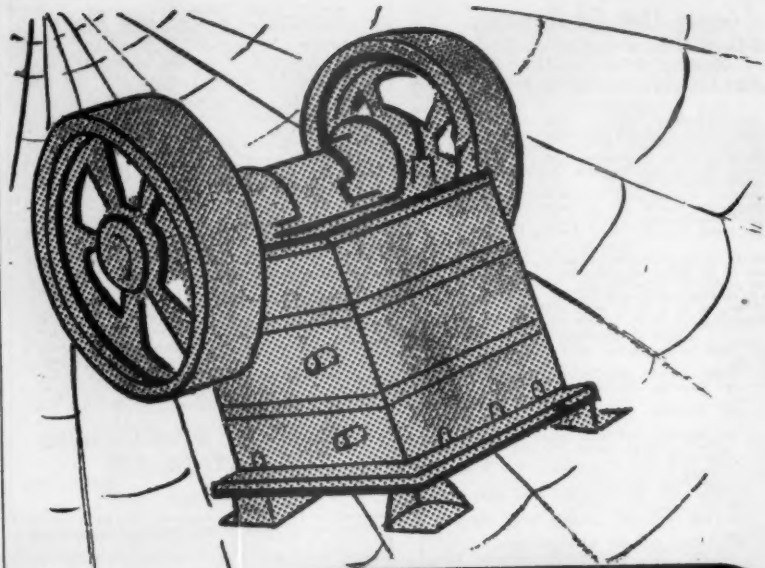

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Caterpillar D-4 tractor only.
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300	Mar. S.B. Dp.	TDC-586	1800
300	A.C. S.B. Dp.	AW-26JS6	1800
250	West. S.S.B. Dp.	CSP-582H	3600
200	U.S. S.B. Splash	SC-587	1800
200	Cent. S.B. Dp.	SC-586	1800
200	Wag. S.B. Dp.	RP-585	1800
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1 Simplicity single surface Shaker Screen 4'x14'
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1 Webster Rotary 60" Gravel Screen
1 Esco Drag Bucket 6½ yards, serial No. 30123, in excellent shape
1 Bucyrus Erie Drag Line class 24, machine No. 887, 100 ft. boom, 4 cu. yard Drag Bucket, with 200 horse electric motor on hoist and drag, 75 horse motor on swing, all electric.

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Brand New ROLLER CHAIN
At 70% Off List Price!

List Price: $8.24 per ft
Manufactured by LINK BELT CO. and WHITNEY CHAIN CO.
Brand New and Perfect
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ASA-100, 1¼" pitch, riveted Roller Chain. Manufactured by LINK BELT CO. and WHITNEY CHAIN CO. Brand new and guaranteed perfect. 23⅓ ft. lengths. Minimum order: 5 lengths—totalling 117.5 ft. Freight allowance: $1.00 per 100 lbs. F.O.B. Chicago. List price $8.24 per ft. Your price, per ft..... $2.40
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NEW CONVEYOR AND ELEVATOR BELTING AT GREATLY REDUCED PRICES

Guaranteed to Meet Listed Specifications

WE PAY FREIGHT ON 200 POUNDS AND OVER

Major Bee Brand, 16# to 19# Friction Pull, 2400# to 3000# Cover Tensile. Heavy Duty. Molded edges. Skim coat between plies increases adhesion and protects against moisture entering carcass. For high tonnages and abrasion resistance. For hauling stone, mineral ore, concrete, cement, coal, chemicals and other similar bulk materials, both wet and dry.

Width	Ply	Duck	Top and Bottom Covers	Price Per Foot
7"	4	32 oz.	1/32" x 1/32"	$1.71
9"	5	32 oz.	1/32" x 1/32"	2.44
12"	3	28 oz.	1/16" x 1/32"	2.31
12"	6	36 oz.	1/16" x 1/16"	4.02
14"	4	28 oz.	1/8" x 1/32"	3.13
16"	4	28 oz.	1/8" x 1/32"	3.28
18"	3	28 oz.	1/16" x 1/32"	3.09
18"	4	28 oz.	1/8" x 1/32"	3.63
24"	3	28 oz.	1/16" x 1/32"	3.84
24"	4	28 oz.	1/8" x 1/32"	4.49
24"	5	28 oz.	1/8" x 1/32"	5.28
30"	4	28 oz.	1/8" x 1/32"	5.53
36"	4	28 oz.	1/8" x 1/32"	6.55

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BONDED 8" JR. I-BEAM CONVEYOR. A low cost unit for moderate speeds and capacities. Ideal for low headroom installations above or below ground.

BONDED TRUSS FRAME CONVEYORS. Available in 18" and 30" deep frame. Built like a bridge. For heavy loads, higher speeds and capacities, clear spans to 50 feet. This will vary with depth of truss, accessories required, etc.

Conveyor prices include brand new belting but in two pieces. By using our shorter "roll-end" pieces, we can pass the saving on to you. Belt is new stock, guaranteed to meet listed specifications.

8" JR. I BEAM FRAME CONVEYOR

Belt Width	Conveyor Length*	Price	Add or Deduct Per Foot
14"	25'	$ 766	$16.62
16"	25'	786	17.10
18"	25'	830	18.03
20"	25'	871	19.30
24"	25'	922	20.68
30"	25'	1012	23.17
36"	25'	1105	25.91

WRITE FOR BULLETIN #1138

18" DEEP TRUSS FRAME CONVEYOR

Belt Width	Conveyor Length*	Price	Add or Deduct Per Five Feet
14"	25'	$ 901	$ 94.80
16"	25'	923	97.69
18"	25'	959	102.42
20"	25'	998	108.45
24"	25'	1067	116.24
30"	25'	1140	129.37

Prices of 30" Deep Truss Frame Conveyors quoted on request.

***Lengths given are center to center of pulleys. For overall length add 1'-6".**

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Wheeling Jaw Crusher 6 x 12
Farrel Jaw Crusher 24 x 13B
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Denver Lab. Jaw Crusher 3¼ x 4½"
Acme Jaw Crusher 14 x 26 Steel Frame
Good Roads Jaw Crusher 5 x 12
Good Roads Jaw Crusher 10 x 30 R.B.
New England Jaw Crusher 14 x 28
Cedar Rapids Jaw Crusher 9 x 24
Sturtevant #1 & 1½ Rotary Crushers
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INDEX TO
Broadcast Advertisers

Angell Construction Co. 206
Bichler Bros. 206
Blue Ball Machine Works 207
Bonded Scale & Machine Co. 209
Brewer & Associates, W. P. 211
Brill Equipment Co. 205
Bruns, Ernest W. 208
Calumet & Hecla, Inc. 211
Chicago Electric Co. 207
Colophon Press 203
Constance, C. A. 211
Darien Corp. 206
Dunn & Associates, James R. 203
Elwood Sales & Mfg. Co. 209
Euclid Div. G.M.C., Iron Range Branch 210
Euclid-Tennessee, Inc. 208
Famalette Equipment Co., Frank ...209
First Machinery Corp. 205
Fogelman, Julius M. 211
Gelb & Sons, Inc., R. 204, 210
Groban Supply Co. 205, 209
H & P Machy. Co. 207
Heat & Power Co., Inc. 211
Heidenreich, Jr., E. Lee 203
Heineken, Inc., W. P. 205
Hume Construction Equip., Inc. ...203
Industrial Dismantling & Salvage Corp. 207
Johnson & Hoehler, Inc. 211
Kaiser-Nelson Steel & Salvage Corp. 206
Kellogg Company, M. W. 204
Kerford Quarry Co., Geo. W. 205
Klinger Machy. & Equip., E. L. ..204
Loofbourow, R. L. 203
Lubrecht, III, Wm. 209, 210
Machinery & Equipment Co. 204
Maryland Slag Co. 207
Material Service Div., General Dynamics Corp. 206
Mid-Continent Equip. Co., Inc. ...206
Mine Equipment & Supply Co. 207
New Jersey Drilling Co. 203
New Ulm Quartzite Quarries, Inc...203
Nussbaum Electric Co. 206
O'Neill, A. J. 209
Paltech Co. 208
Perkoski, J. H. 203
Perry Equipment Corp. 206
Power Equipment Co. 209
Rand, John R. 203
Reames, F. J. 203
Riggs, Karl A. 203
Scott Blasting Mats, Inc. 211
Smith, Inc., L. B. 209
South River Sand Co. 207
Standard Equipment Co. 207
Stanhope, Inc., R. C. 211
Swabb Equipment Co., Inc., Frank..210
Thomasville Drilling & Testing Co..203
Tractor & Equipment Co. 210
Troyer Co., Stanley B. 205
Tupes of Saginaw, Inc. 206
Unverzagt & Sons, Inc. 210
Wenzel Machy. Co. 205
Whisler Equipment Co. 204

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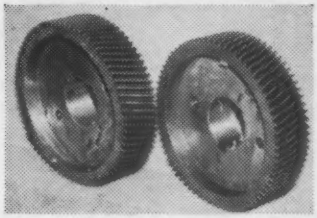

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Application: Defining ore bodies; drilling blast holes and mineral sampling for ore grade control

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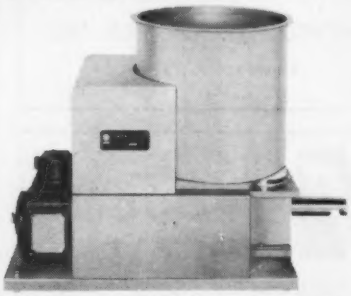

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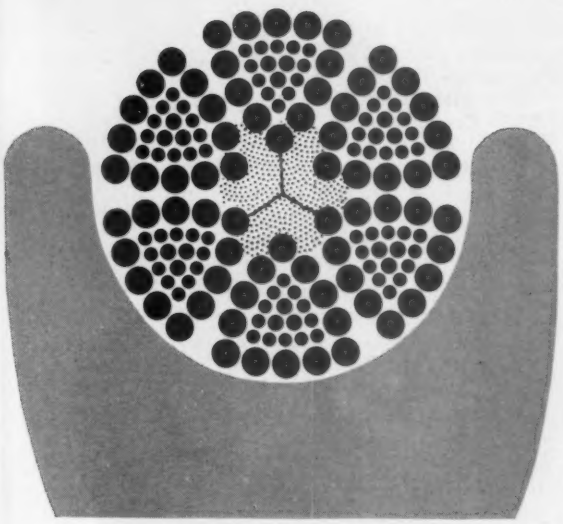
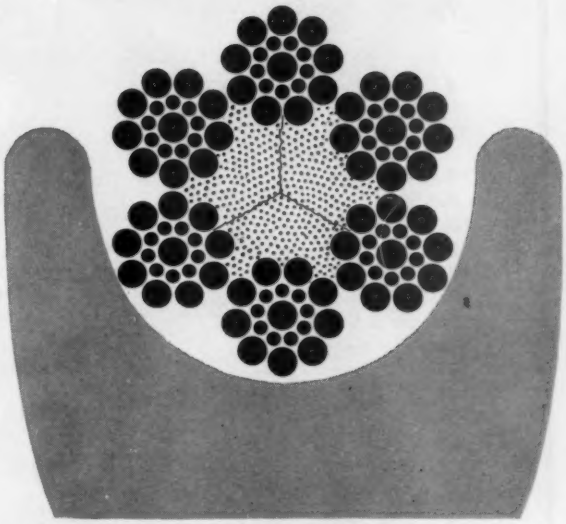


BETHLEHEM FLATTENED STRAND



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Index to Advertisers

A

Alemite Division, Stewart-Warner Corp. 130
*Allis-Chalmers 44-45, 47, 49
Aluminum Company of America 170-171
American Hoist & Derrick Co. 2
*American Manganese Steel Division, American Brake Shoe Co. 118-119
*American Marine & Machine Co. 43
*American Steel & Wire Division, U. S. Steel Corp. 21
*Anaconda Wire & Cable Co. 215
Atlas Chemical Industries, Inc. 68-69
Austin Powder Co. 61

B

*Bailey Meter Co., Cement Division 197
*Barber-Greene Co. 110-111
Bethlehem Corporation 196
*Bethlehem Steel Co. 213
Black Bros. Co., Inc. 212
Bradley Pulverizer Co. 117
Broadcast Section 203-211
*Brunner & Lay, Inc. 50
*Buell Engineering Co. 181
Butler Mfg. Co. 169

C

Case Co., J. I. 54-55
Caterpillar Tractor Co. 16-17, 142-143, 166, 167
Chain Belt Co. 37, 39, 41
Chevrolet Motor Div., General Motors Corp. 134-135
Chicago Pneumatic Tool Co., REICHdrill Division 22
Chrysler Corporation, Dodge Division 172-173
Clark Equipment Co. 64-65
*Cleveland Wire Cloth & Mfg. Co. 162
Clupak, Inc. 70
*Colorado Fuel & Iron Corp. 192
*Combustion Engineering, Inc., Raymond Division 160

D

Deere & Company 8-9
*Deister Machine Co. 183
Diamond Power Specialty Corp. 62-63
Diesel Energy Corp. 147
Differential Company 132
Dodge Division, Chrysler Corporation 172-173
Dodge Mfg. Corp. 180
Donaldson Co., Inc. 148
Dorr-Oliver, Inc. 190
Dracco Division, Fuller Company 152-153
Dredge Machinery Corp. 66
Du Pont de Nemours & Co., Inc., E. I. 145, 179

E

*Eagle Crusher Co., Inc. 60
*Eagle Iron Works 26-27
Eaton Mfg. Co., Fuller Tranmission Div. 124
*ESCO Corporation 103-104
Euclid Division, General Motors Corp. 149

F

Fairbanks Morse Scale Division, Component of Fairbanks Whitney 159
*Falk Corporation 92-93
Firestone Tire & Rubber Co. 150
Flexible Steel Lacing Co. 53
Ford Motor Co. 6-7
Formsprag Company 42
*Fuller Company 152-153
Fuller Transmission Div., Eaton Mfg. Co. 124

G

*Gardner-Denver Co. 193
Gates Rubber Co. 136
General Motors Corp., Chevrolet Motor Division 134-135
Euclid Division 149
Gilson Screen Co. 158
Goodrich Company, B. F. 1, 174-175

H

H & L Tooth Co. ..... Inside Back Cover
*Hammermills, Inc. 202
Hannon Electric Co. 165
*Harnischfeger Corporation ..... Outside Back Cover
Heil Company 191
*Hendrick Mfg. Co. 73

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Hendrix Mfg. Co., Inc. 182
Hercules Powder Co. 194
Hough Co., Frank G. 32-35

I

*Ingersoll-Rand 133
International Nickel Co. 200
*Iowa Mfg. Co. 18-19

J

Jeffrey Mfg. Co. 199
*Joy Mfg. Co. 146

K

*Kennedy Van Saun Mfg. & Engrg. Corp. 76

L

Lehigh Fan & Blower Div., Fuller Company 152-153
Lima Construction Equipment Div., Baldwin-Lima-Hamilton 56-57
*Lippmann Engineering Works, Inc. 139
Longyear Company, E. J. 154
*Ludlow-Saylor Wire Cloth Co. ..Inside Front Cover

M

Manhattan Rubber Div., Raybestos-Manhattan, Inc. 184-185
Marion Power Shovel Co. 195
*McLanahan Corporation 71
Mission Mfg. Co. 129

N

*Nordberg Mfg. Co. 156-157
Northwest Engineering Co. 5

P

*Pennsylvania Crusher Div., Bath Iron Works Corp. 20
Power-Curve Conveyor Co. 161

R

Radio Corporation of America 52
Raybestos-Manhattan, Inc., Manhattan Rubber Div. 184-185
*Raymond Division, Combustion Engineering, Inc. 160
REICHdrill Division, Chicago Pneumatic Tool Co. 22

S

*Sauerman Bros., Inc. 12
Schaffer Poidometer Co. 43
*Schramm, Inc. 144
Scott Paper Co., Hollingsworth & Whitney Div. 74
*Screen Equipment Co. 164
Screen Heating Transformers, Inc. 14
*Simplicity Engineering Co. 29
SKF Industries, Inc. 198
*Smidth & Co., F. L. 72
*Smith Engineering Works 31
Southern Tire Co. 196
*Stedman Foundry & Machine Co., Inc. 151
Stewart-Warner Corp., Alemite Division 130
Stoody Company 125
Straub Mfg. Co. 163
*Sturtevant Mill Co. 4
Sutorbilt Corporation, Fuller Company 152-153
*Syntron Company 187

T

Taylor-Wharton Co. 128
Thew Shovel Co. 176, 218
*Thomas Foundries, Inc. 51
Trailmobile Inc. 36
*Traylor Engrg. & Mfg., Division of Fuller Co. 67, 152-153

U

Union Bag - Camp Paper Corp. 186
United States Rubber Co. 140, 188-189
*United States Steel Corp. 21, 75
*Universal Engineering Corp. 217
Universal Road Machinery Co. 168

V

Vibra-Screw Feeders, Inc. 212
Vulcan Iron Works, Inc. 196

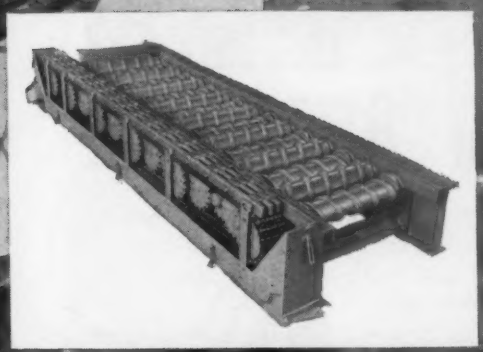
W

West Virginia Pulp & Paper Co. 10
Wheelabrator Corporation 155
Winter-Weiss Co. 212
*Worthington Corporation 101

***See also Detailed Information in 1961 Pit and Quarry HANDBOOK and/or CONCRETE INDUSTRIES YEARBOOK.**

Enter 217 on card, page 177 →

EXTRA



"WOBBLER FEEDER WORTH EXTRA $100 A DAY TO ME"

According to Jack Patterson, President of Patterson Quarries, Inc., St. Charles, Minn., "The ability of the Wobbler Feeder to take out the bulk of fines, *wet or dry* and keep them out of the primary crusher is worth at least $100 per day to me!"*

The Wobbler Feeder works equally well in wet or dry material. It will not plug, blanket or blind. And it operates with lower horsepower, lower maintenance.

Because the Wobbler so effectively takes out fines, it automatically reduces jaw or hammer wear and maintenance in the crusher!

These are the two big reasons why you'll make EXTRA profit with a Wobbler in your set up.

More reasons why a Wobbler Feeder will make EXTRA money for you.

- It will increase your overall production
- It will let you work in wet weather when other operations are shut down
- It requires less head room, less set up time, and will fit into your present system
- Performs smoothly, without vibration or excessive wear on component equipment

* For further details on the Universal Wobbler Feeder, write for illustrated brochure and reprints of Jack Patterson's article — "One New Plant is Good, Two are Better". Also send for new catalog telling the complete Universal *systemized* equipment story.

PETTIBONE UNIVERSAL
In Cedar Rapids Since 1906

UNIVERSAL ENGINEERING CORPORATION

619 C Avenue, N.W., Cedar Rapids, Iowa

A Subsidiary of Pettibone-Mulliken Corporation, 4700 W. Division St., Chicago 51, Illinois

Their 14th Lorain . . . Another "85A"

H. E. Millard Lime & Stone Company of Palmyra, Pennsylvania, has purchased 14 Lorains over the years to work in its four-level limestone quarry. This new 2½-yard Lorain-85A shovel is the second of this model used for working at the quarry face.

Repeat Lorain ownership like this, on demanding operations like this, proves that Lorains are where the tough jobs are. There are many reasons for this. Here are a few:

"Joy-Stick," Air-Power Control. Finger-tip control of "metered" air power eliminates slam-bang operation. Permits smooth blending of motions. Saves the operator. Saves the machine. Lowers costs.

Shear-Ball® Connection. Like a huge ball bearing, this holds the turntable to the crawler, provides smooth, rock-steady swing and eliminates the constant maintenance, adjustment and lubrication problems of other types of connections. Saves time. Saves man-hours. Saves costs. Carries a 10-year warranty.

Additional Features. A stable, rugged crawler with independent travel, with two speeds in both directions is fully controlled by air power. Three-shaft turntable design gives flexible operation such as simultaneous hoist, swing, and travel. All-welded, box-section shovel boom or square-tubular-chord crane boom provide rugged front ends.

There are many more reasons why you should use Lorains. Get the whole story from your nearby Lorain shovel-crane distributor. Call him today.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN®

DOES MORE FASTER—FOR LESS

PLANTS in Lorain and Elyria, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawler from ⅜- to 2½-yard capacity · Cranes from 7 to 80 tons . . . on crawlers, and as rubber tire Moto-Cranes, and Self-Propelled Cranes · Rubber tire front-end Moto-Loaders in 6,000-lb., 7,000-lb., and 9,000-lb. operating capacities.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

H&L

Teeth that really dig!

THE ALL FORGED SUPER STEEL 40-L POINT

HARDER—WEARS LONGER—NO BREAKAGE, ALL FIELD REPORTS SAY THE SAME, THE 40-L POINT IS...

BIG NEWS

IN THE INDUSTRY

FOR SHOVELS 8 AND 9 YARD CAPACITY

PAT. NOS. 2568075
2669153

H&L pioneered the two-part tooth, and for over 31 years have specialized in the manufacture of quality digging points, with a world wide record of superior performance.

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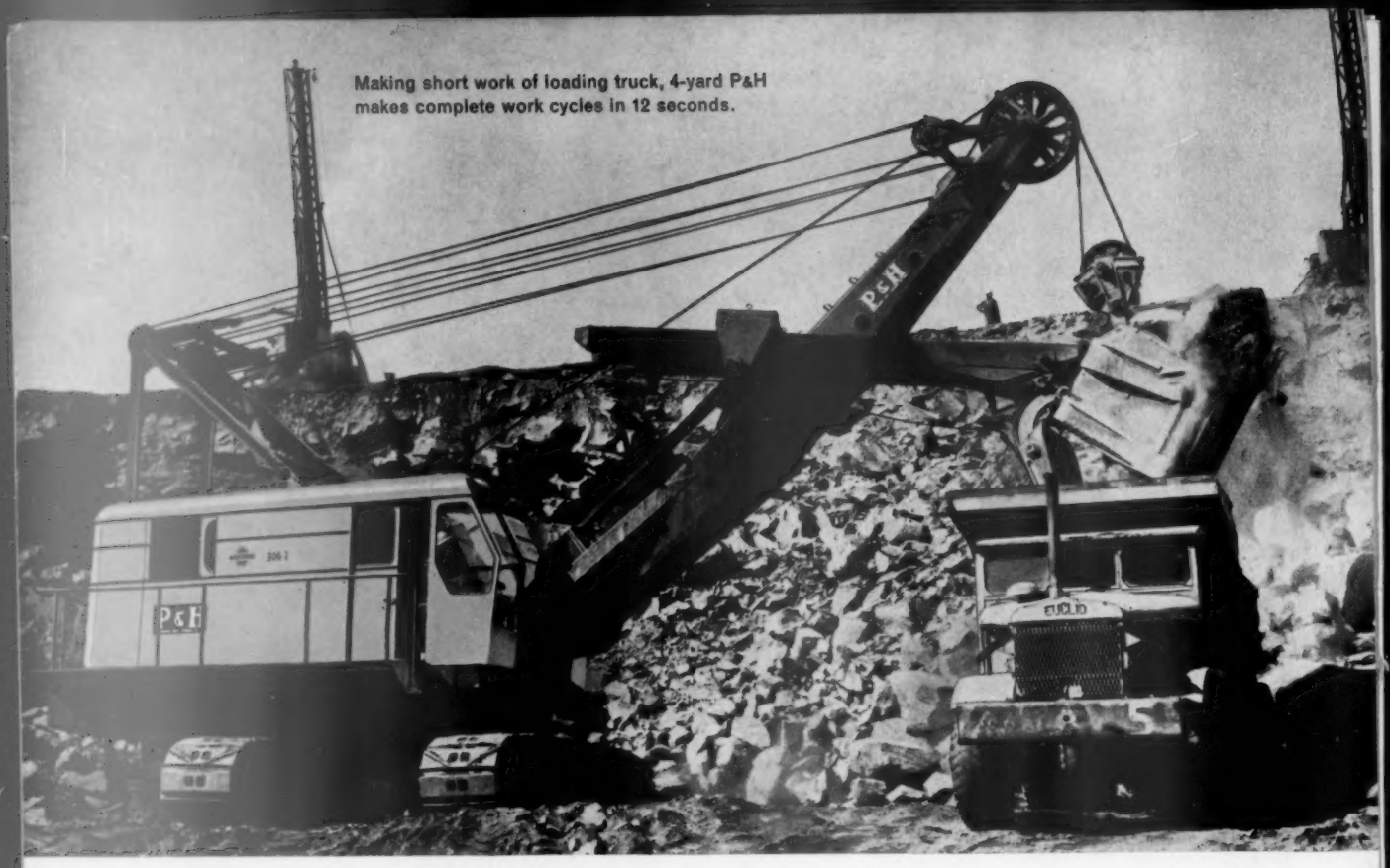
H&L **TOOTH COMPANY**
1540 S. GREENWOOD AVE.
MONTEBELLO, CALIFORNIA

Enter Cover 3 on card, page 177



Making short work of loading truck, 4-yard P&H makes complete work cycles in 12 seconds.

Magnetorque swingers are the reason . . .

"4 yard P&H out-produces two 2½ yard shovels"

. . . STOCKBRIDGE STONE COMPANY, Atlanta, Georgia
Division of VULCAN MATERIALS COMPANY

Powerful P&H handles heavy rock with tireless ease as it works 16 hours a day digging and loading shot rock.

J. G. Lambert, Superintendent, has this to say about his operation— *"Our 4 yard P&H shovel, with Magnetorque swingers, accounts for more than half of the yardage produced at our Fortson quarry. It actually produces more than both of our other 2½ yard shovels combined."*

12 to 15 seconds work cycles. Stockbridge Stone supplies aggregate throughout Georgia, Alabama, and to four company-owned plants that manufacture concrete blocks and ready-mix. Of prime importance to them is the speed and dependability with which their shovels can excavate rock and load trucks to keep their processing plants in production. This company reports that their P&H shovel loads 18-ton trucks in 5 or 6 passes with work cycles averaging 12 to 15 seconds.

Edward Pitts, operator of the P&H says that Magnetorque swingers are the reason he gets better than 25% faster work cycles. He points out that Magnetorque swingers, unlike friction-type clutches, never over heat, and are not affected by temperature changes or load size.

P&H works two 8 hour shifts per day. To meet the heavy demand for aggregate, Stockbridge operates their 4-yard P&H shovel on a 16-hour day . . . and they operate in all types of weather, even the heaviest rains. This company has proven to itself that P&H delivers exceptional performance under the most rigorous conditions—steady, fast cycles with no downtime other than normal preventive maintenance.

Another feature, "Bud" Lambert stresses, is the propel brake on the P&H—this brake control gives more productive working time because it eliminates the constant need to "dog" or "undog" the machine with clumsy jaw clutches for every move.

For more information on this job, write for Case History 136.

HARNISCHFEGER P&H
Milwaukee 46, Wisconsin

Enter Cover 4 on card, page 177